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ABSTRACT

This periodic compendium of environmental training opportunities includes information about educational opportunities for noncredit, and undergraduate through postgraduate studies around the world. The areas of study include the following: environmental science; agriculture education and science; wildlife management; natural resources, land use, tropical resource ecology; maritime boundary elimination; environmental planning; international resource management and policy; environmental law; limnology; hydrology; urban development; environmental issues; environmental impact assessment; environmental technology; rural development; sustainable rural development; arid lands and pastoral development studies; science education; food microbiology; conservation education; and environmental engineering. The material is divided into the following sections: Training opportunities available in (1) Asia and the Pacific - four entries; (2) Africa - two entries; (3) Latin America and the Caribbean - one entry; (4) North America - eight entries; and (5) Europe - 23 entries. Addresses, dates, phone numbers, and sometimes fax numbers are provided along with a short description of each program, class offering or institution. (MCO)

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UNITED NATIONS ENVIRONMENT PROGRAMME NAIROBI



NUMBER 5

NOVEMBER 1991

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A PERIODIC COMPENDIUM OF OPPORTUNITIES IN ENVIRONMENTAL TRAINING.

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SEE WHAT THE UNIVERSITY OF QUEENSLAND HAS TO OFFER YOU



ENVIRONMENTAL SCIENCE

The Bachelor of Applied Science (BSeApp) in Environmental Science is a four-year course when taken full-time. It may be taken also on a part-time basis though part-time candidates should note that few subjects are offered in the evenings.

The scientific focus of the degree is in the area of ecology, i.e. the interrelationship between various plant and animal species and how their populations can be modified by changes in the environment, whether natural or human-induced. The first three years of the course contain a core of botany and zoology, supported by relevant studies in chemistry, biochemistry, geology and soil science, microbiology and mathematical modelling and data analysis techniques. This is designed to give a foundation in the basic science relevant to environmental problems.

The Dean
Faculty of Science
The University of Queensland
QLD 4072

Telephone: (07) 377 2144

LAND RESOURCE SCIENCE

This degree is designed to produce graduates with a thorough knowledge of (1) the major components of our environment (soil, water, air, plants and animals) and their interrelationships; and (2) relevant socio-economic processes and implications of resource usage. The course shows how a scientific basis to land utilisation can allow the use of resources in an environmentally sustainable manner.

Year one is common with the Bachelor of Agricultural Science degree and provides a grounding in the basic physical and biological sciences. The soil, plant, animal and social sciences are the focus of year two. Years three and four concentrate on the survey of land resources, their interrelationships, and methods of ensuring their productive use in a sustainable manner. Legal, economic and social factors in resource usage are considered in a number of multidisciplinary subjects.

The Dean
Faculty of Agricultural Science
The University of Queensland
QLD 4072

Telephone: (07) 337 3687

Fax: (07) 870 4897

NATURAL SYSTEMS AND WILDLIFE MANAGEMENT

The Natural Systems and Wildlife Management BAppSc degree is offered at Gatton College. Graduates are able to use scientific, technical, financial and managerial information in problem solving for protected areas and wildlife management. The degree combines biological studies with multidisciplinary skills in environmental management, decision making and policy analysis. Environmental management is set within the social, economic and scientific framework necessary for a professional approach to problem solving.

The first five semesters of the course are based on the traditional discipline areas associated with natural systems and wildlife management. In the sixth semester of the degree each student is required to undertake a period of twenty weeks of supervised practical experience in an organisation involved in either the management of protected areas or environmental management. The final two semesters of the course focus on the integration of material previously presented with technical, financial and management information.

LAND RESOURCES MANAGEMENT



This BAppSc degree is offered at Gatton College. The degree aims to train specialists in land resources management. It differs from the Land Resource Science degree by enhancing a core of scientific studies with management studies to attain a management and planning focus.

The first four semesters provide knowledge of technology and management relevant to agricultural industries. Semester five involves structured, professional work experience with practising resource management professionals. The nature of this work experience may include aspects of agricultural as well as non-agricultural land utilisation. The last three semesters consist of scientific, technological, economic and sociological studies.

The Dean of Applied Science
The University of Queensland, Gatton
LAWES QLD 4343
OR
The Enrolments Officer

Telephone: (078) 62 0905

Fax: (078) 62 3081

Telephone: (078) 62 0217

ENVIRONMENTAL ENGINEERING

The degree in Environmental Engineering builds on the scientific and engineering principles of Chemical and Civil engineering, together with economics, law, sociology and the sciences of biology and ecology. The course aims to create professional engineers with good communication skills and an understanding of the principles of sustainable development and how they apply to industry. A key focus is the consideration of environmental and ecological issues within the design, operation and management stages of industrial processes. A second focus is on the minimisation, control and treatment of the solid, liquid and gaseous wastes that are classically associated with living in a modern, diversified economy.

Engineers use their technical expertise in making appropriate use of natural resources for the benefit of society, taking into account considerations such as economic, social and environmental constraints.

While all engineering disciplines highlight aspects of environmental management, environmental engineering has recently developed as a distinct stream of the engineering profession due to employer demand for specialists who have developed appropriate environmental management skills just as effectively as key traditional process engineering skills. An engineer is essentially a problem solver and environmental engineers are trained to consider the environment at the design stage of development. They act to reduce the effects of industry and other activities on the environment, and implement ways to reduce or eliminate existing and potential environmental concerns. The multifaceted nature of environmental engineering makes for a very challenging and dynamic profession, in which good management and communication skills are just as important as technical knowledge and expertise.

Head of Department
Department of Chemical Engineering
The University of Queensland
QLD 4072

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Fax: (07) 870 3848

GRIFFITH UNIVERSITY



GRADUATE SCHOOL OF ENVIRONMENTAL SCIENCES AND ENGINEERING

Graduate School of Environmental Sciences and Engineering

Public concern about the effect of resource development and use on our environment is increasing demand for specialised environmental researchers, engineers, consultants and professionals in government, industry, academia and research.

The Graduate School of Environmental Sciences and Engineering is hosted by the Division of Environmental Sciences at Griffith University. The Graduate School is recognised nationally and internationally for its excellence in postgraduate teaching and research.

The Graduate School is one of the largest postgraduate teaching and research centres for environmental sciences and engineering in the world. There are 60 faculty staff and 200 students.

The School's high calibre of postgraduate students, lecturers and facilities makes it the premier centre for research and coursework studies in the environmental sciences and engineering.

The activities of the Graduate School are supported both professionally and financially by large corporations, research organisations and governments.

Its breadth of academic expertise in the environmental sciences and engineering includes: land and water processes, ecology, social science, mathematics and statistics, land use planning, environmental education, environmental pollution and health, waste management and waste disposal technologies.

The Graduate School offers a range of postgraduate programmes - Doctor of Philosophy, Master of Philosophy, Coursework Masters Degrees, Graduate Diplomas and Honours Degrees.



The Graduate School has brochures that provide details on the postgraduate degrees and specific study areas. Further information is available by telephoning (07) 875 7427, faxing (07) 875 5288 (61-7-875 5288 int. for by writing to:

Mr John Urquhart
Divisional Administrator
Environmental Sciences
Griffith University,
QUEENSLAND 4111
AUSTRALIA

GRIFFITH UNIVERSITY

Coursework Masters Degrees and Graduate Diplomas

The Graduate School offers five Coursework Masters and three Graduate Diplomas. Students can choose to study for a:

- Master of Science in Environmental Management
Graduate Diploma of Environmental Management
- Master of Environmental and Community Health
Graduate Diploma of Environmental and Community Health
- Master of Public Health
- Master of Environmental Education
Graduate Diploma of Environmental Education
- Master of Science in Science, Technology and Society

All Masters programmes, except the Master of Science in Science, Technology and Society, involve three semesters full-time study (six semesters part-time) and consist of two thirds coursework and one third dissertation work. The Master of Science in Science, Technology and Society is equivalent to four semesters part-time.

All Graduate Diplomas involve two semesters full-time and four semesters part-time.

Entry to Coursework Masters programmes may be available to people who hold a pass degree with at least three years' work experience, hold a first or second-class Honours degree, and/or have obtained the approval of the School for their candidature.

The closing date for Coursework Masters and Graduate Diploma applications is October 31, except for the Master of Public Health which is September 30.



Master of Science in Environmental Management Graduate Diploma of Environmental Management

The Master of Science in Environmental Management focuses on environmental assessment and resource management, combining relevant process-based knowledge in the natural and social sciences with essential aspects of environmental management, planning and policy.

The programme develops skills in analysing alternative solutions for day-to-day management of resource industries, for assessing the economic, social and environmental impacts of proposals and the evaluation of environmental policies and plans.

The Master of Science in Environmental Management has proven valuable to professionals who need to consider environmental issues in occupations such as engineering, town planning, law, land management and science teaching.

SCHOOL OF ENVIRONMENTAL ENGINEERING

The Division of Environmental Sciences offers a variety of full-time degree programmes concerned with the study of environmental problems and their management. It is the largest centre for the undergraduate study of environmental issues in Australia.

The Division, through its new School of Environmental Engineering, is one of the first centres to offer studies leading to the award of a Bachelor of Engineering in Environmental Engineering.

Environmental Engineering is the growth industry of the 90's. With concerns for the environment increasing daily the Division has recognised the importance of introducing programmes of study designed to train people with skills and professionally recognised qualifications.

In general terms, environmental engineering is concerned with the management of waste and pollution: its generation, collection, storage, treatment and disposal. In terms of this definition "Waste" includes air pollution, noise, the pollution of land or water by effluent from agricultural, industrial, urban or mining wastes, and sewage.

Programme Details

The Bachelor of Engineering in Environmental Engineering (BE) is a four year full-time programme of study. Students undertaking the programme will develop an appreciation of the environmental sciences in conjunction with engineering principles. They will study topics relevant to the environment such as human society, soil science, ecology, biology, hydrology, climatology, environmental impact assessment and political economy. Engineering topics will include mathematics, chemistry, design, engineering principles and project management.

Graduates will be trained to understand and consider their environment when developing engineering projects. They will be able to view the project as a whole and how it interacts with the environment. Engineers are now taking responsibility for their projects and a student graduating from Griffith University will lead the way in this new awareness.

GRIFFITH UNIVERSITY

SCHOOL OF AUSTRALIAN ENVIRONMENTAL STUDIES

The Division of Environmental Sciences at Griffith University is recognised as Australia's largest national centre for the undergraduate study of environmental problems and their management.

Within the Division is the School of Australian Environmental Studies which offers Bachelor of Science degree programmes concentrating on five areas of interest that make up important elements in the relationship between humankind and the environment. They are:

- Ecology and Ecosystem Management
- Environmental Pollution and Health
- Land Use and Management
- Social Sciences
- Applied Mathematics

The following programmes are offered by the Division through its School of Australian Environmental Studies:

Bachelor of Science (BSc)

A three year full-time programme leading to the degree of Bachelor of Science. The programme consists of a first year foundation programme and a main study programme in the second and third years.

The foundation programme promotes understanding of the complexities and variables of the environment and in particular its basic biological, economic, physical, political and social components.

In the main studies programme students are required to select one or more of the following concentration areas as the focus of their study:

- Society, Culture and Environment
- Pollution and Health
- Ecology and its Applications
- Land and Water Processes
- Environmental Planning
- Environmental Policy and Economics
- Mathematical and Statistical Modeling and Analysis
- Environmental and Science Policy Studies



GRIFITH UNIVERSITY
DIVISION OF ENVIRONMENTAL SCIENCES
GRADUATE SCHOOL

MASTER OF SCIENCE IN ENVIRONMENTAL MANAGEMENT

GRADUATE DIPLOMA OF ENVIRONMENTAL MANAGEMENT

Programme Objectives

The Master of Science in Environmental Management programme focuses on environmental impact assessment and resource management. The programme develops the knowledge and skills required to explore alternative solutions to environmental and development proposals and to analyse critically current and future environmental problems.

The Master of Science in Environmental Management focuses on environmental planning and management. The programme covers theoretical and applied knowledge in both the natural and social sciences appropriate to the understanding of environmental problems and the seeking of solutions. The coursework component provides a basis in the natural sciences especially ecological and earth sciences processes, social sciences, law and economics. Two courses develop basic computing, mathematical and research skills.

Material relevant to environmental planning and management is integrated into all courses including how various systems operate, why environmental problems arise and the effectiveness of different management solutions.

The programme provides a limited amount of specialisation by allowing students elective choice of courses within the programme and in other programmes at the University for students with specific skills and interests.

The dissertation component provides students with the opportunity to pursue a research topic under supervision and to develop capacities for independent research. Specific training is given in research design, research methods and report writing.



LAND USE MANAGEMENT FOR TROPICAL AGRICULTURE

In time with world population growth and increasing pressure on scarce resources, there is a growing worldwide awareness of our need to act as a global community to ensure our common survival. A vital part of this requires that we develop and manage effectively, sustainable agricultural production systems that are not only ecologically responsible but highly productive.

Queensland, one of the more agriculturally developed parts of the tropical world, leads the way in developing sustainable production systems for the often harsh and variable tropical environment. Successful land use requires an understanding of the soils, climate and land use needs, effectively integrated into a sound management system that considers all technical, environmental, economic, sociological and political aspects.

This course has arisen from the highly successful first International Symposium on Integrated Land Use Management for Tropical Agriculture conducted in September 1990 as an initiative of the Queensland Department of Primary Industries in association with Bond University. It provides ideal conditions for scientists to learn, to exchange ideas for mutual benefit, and to become part of the expanding, formal international network of land use managers formed at the 1990 symposium and coordinated by officers of my Department.

Director-General
Attn: International Consultancies Branch
Queensland Department of Primary Industries
GPO Box 46
Brisbane Queensland 4001
AUSTRALIA

Telex No. AA 142149
Facsimile No. 61 7 221 3896
Telephone No. 61 7 239 3243

COURSE OUTLINE

The course will run for six weeks. It is a very practical course and involves field work, lectures, workshops and several field tours. The course includes visits to farms and research stations, and provides opportunities to interact with farmers on land use management issues. The major topics to be covered in the course include:

- *land use planning strategies*
- *soil survey methodology*
- *land resource evaluation*
- *soil conservation design and layout*
- *land degradation and rehabilitation*
- *GIS and database management*
- *conservation farming systems*
- *farm planning and integrated catchment management*
- *extension and communication skills*
- *project management*

A detailed course program will be provided when course nominations are accepted. There are also opportunities for participants to raise items of particular interest for general discussion.

VENUES AND DATES

The course will start in Brisbane on Tuesday 3 May 1992 with an introduction to the course and an opportunity for participants to present an outline of the land use issues of concern in their country. Following lectures and workshop sessions, there will be a comprehensive field tour to Toowoomba, Biloela, Rockhampton, Bundaberg and Gympie.

The group then returns to Brisbane for further lectures, workshops and practical field tours before the course ends on Friday 12 June 1992.



QUALIFICATIONS

The course is designed for land use managers and planners, and for those involved in land resource assessment. Tertiary qualifications in appropriate areas are desirable though not essential.

Participants must be competent in both written and spoken English as all lectures and practical sessions are conducted in English.

The Queensland Department of Primary Industries is a State Government organisation providing a complete and integrated range of research, extension and regulatory services to rural and fishing industries and to consumers. Its land management and land use planning expertise for sustainable agriculture in the tropics and subtropics has earned it an enviable international reputation.

Grain cropping, horticultural and pastoral land uses dominate the State, with climates ranging from humid tropical to arid. Queensland farming technology has developed to meet the challenges of the variable soils and climatic conditions. Such experience is of value to other developing countries when considering land use management options.



University of Canberra, Faculty of Applied Science RESOURCE & ENVIRONMENTAL SCIENCE DIVISION

Resource & Environmental Science at the University of Canberra is concerned with applied science in such fields as geology; land evaluation and management; ecology; water science; environmental chemistry; vegetation, habitat and wildlife management; parks and recreation management; remote sensing; natural heritage conservation; and environmental policy.

The Division operates as an integrated group, working on an interdisciplinary basis to overcome some of the traditional barriers between disciplines in the natural resource and environment field.

The Division had its origin in 1969, as part of the then Canberra College of Advanced Education. The initial focus was on undergraduate degree studies, with graduate diplomas, master's, honours and doctoral programs being added over time. More than 600 students have graduated with bachelor degrees, graduate diplomas and master's degrees over the last twenty years or so. Many have now found satisfying and senior jobs in resource management.

The Division consists of 20 academic staff, supported by technical and administrative personnel. Divisional activities operate out of a series of laboratories and related facilities in the Applied Science building on campus. The University also operates a field station on the coast next to the Jervis Bay Nature Reserve. The teaching, research and consulting activities of the group give considerable emphasis to applied science and field study over a wide region of Australia.

Further details of the Division's activities (including background on the undergraduate or graduate study programs, short courses, or on any of the research centres) is available from:

Secretary, Resource & Environmental Science Division, University of Canberra
PO Box 1, Belconnen ACT 2616; phone (06) 252 2525; fax (06) 252 2166.
AUSTRALIA

The undergraduate study specialisations available within the Division (singly, or in combination) include:

- Geology
- Land appraisal
- Parks & recreation
- Remote sensing
- Soil science & conservation (subject to approval)
- Vegetation & wildlife management
- Water science
- Applied geography

There are similar options at honours, graduate diploma, master's or PhD levels. There is also an active academic exchange and visiting fellow program. The Division runs a wide range of professional short courses (e.g. the long-running Summer School of Park Management).

Staff are active not only in teaching and short courses, but have a considerable track record in grant & contract research, consultancy for industry or resource management agencies, and in service on government advisory panels or inquiries. The Division contains four research groups:

- Water Research Centre
- Applied Ecology Research Group
- Centre for Australian Regolith Studies (UC/ANU)
- Remote Sensing Reference Centre



UNIVERSITY OF CANBERRA

CAREERS IN RESOURCE AND ENVIRONMENTAL SCIENCE

through courses offered by the Faculty of Applied Science

Resource and environmental science encompasses the study and management of biological and geological resources of any area. There is a wide range of courses leading to many interesting and responsible jobs. Working in this field gives you the opportunity to have a positive effect on the world. For more details of these courses, see your careers adviser, or contact the person listed for each section.

GEOLOGY

The study of the history & structure of our planet, leading to careers in mineral exploration (finding ore bodies), mine geology (operational mines need geologists to maximize production efficiency), engineering geology (assessment of foundations for dams, buildings & bridges) and environmental geology (advising on hazards such as landslides & earthquakes).

Major employers: Mining & exploration companies, consultants, state geological surveys, Bureau of Mineral Resources

Contact: Dr Wolf Mayer (06) 252 2033

LAND APPRAISAL

The study of the distribution of soils, vegetation and water resources of an area, leading to careers in soil conservation (including land rehabilitation) and environmental planning for the effective use & management of land resources.

Major employers: Soil conservation services, planning authorities, local government, consultants

Contact: Mr Nick Abel (06) 252 2083

PARKS & RECREATION

This course involves the study of natural and cultural resources and their management in both urban and natural settings, with emphasis on heritage protection, outdoor recreation, tourism & park management. It prepares for employment as park & heritage managers, rangers, recreation officers & planners.

Major employers: Parks & wildlife agencies, recreation & tourism authorities, local government, consultants

Contact: Mr Adrian Davey (06) 252 2517

REMOTE SENSING

Remote sensing is the science of collecting information from the earth's surface from aircraft or satellites. It is a new and rapidly-developing field of study which is used widely in agriculture, forestry, land use planning, flood and bushfire monitoring, geology and meteorology. The imagery obtained from aircraft and satellites is interpreted both visually and by computer manipulation techniques.

Major employers: State & commonwealth resource management agencies, mineral exploration companies, forestry commissions, consultants

Contact: Dr Brian Button (06) 252 2565

VEGETATION & WILDLIFE MANAGEMENT

Field surveys to assess plant and animal populations, and data analysis skills, provide the scientific input to policy and management decisions relating to practical issues such as species and habitat conservation, the control of feral animals and bushfire hazard assessment.

Major employers: Parks & wildlife services and other environmental management agencies, consultants

Contact: Dr David Williams (06) 252 2522

WATER SCIENCE

Ensuring water purity for drinking, irrigation or recreational use requires an ability to assess the biological and chemical properties of water. A thorough understanding of the ecology, chemistry and hydrology of streams and lakes, and their catchments, is essential to protect and manage Australia's limited resources.

Major employers: Government environment agencies; CSIRO; fisheries, forestry & agriculture departments; pollution & water quality control bodies; consultants

Contact: Dr Bill Maher (06) 252 2531

SOIL SCIENCE & CONSERVATION

This specialisation is expected to commence in 1991, subject to approval. To ensure the future productivity of national soil resources, it is necessary to understand physical, chemical and hydrological aspects of soils, as well as their distribution. This course is directed to the conservation, mapping and management of soils.

Major employers: State conservation agencies, departments of forestry, agriculture & primary industry, CSIRO, consultants

Contact: Dr Graham Taylor (06) 2522031

Rubyne Parolin (06) 2522038

APPLIED GEOGRAPHY

Geographers are concerned with a wide range of tasks which involve an understanding of both the physical and economic environment in areas such as demography (predicting future welfare needs & market potential of an area), urban & regional planning (for land management, transport and welfare) or trade & overseas affairs (negotiating new markets, trade contacts, diplomacy).

Major employers: Government departments, planning authorities, consultants

Contact: Mr Terry Birtles (06) 252 2326



MANANGA AGRICULTURAL MANAGEMENT CENTRE SWAZILAND

1992 PROGRAMME

PC 50 MANAGEMENT DEVELOPMENT PROGRAMME 6th January - 6th March Closing Date 11 November 1991
CM 7 COMPUTERS IN MANAGEMENT 9th March - 10th April Closing Date 13 January 1992
EM1 EXTENSION MANAGEMENT 9th March - 10th April Closing Date 13 January 1992
AM 3 AGRICULTURAL MARKETING 20th April - 15th May Closing Date 24 February 1992
ENVIRONMENTAL MANAGEMENT IN DEVELOPMENT 20th April - 15th May Closing Date 24 February 1992
PC 51 MANAGEMENT DEVELOPMENT PROGRAMME 25th May - 24th July Closing Date 30 March 1992
RURAL CREDIT MANAGEMENT 1st June - 3rd July Closing Date 6 April 1992
SENIOR MANAGERS PROGRAMME 3rd August - 28th August Closing Date 8 June 1992
MANAGEMENT OF ENTERPRISE DEVELOPMENT 31st August - 2nd October Closing Date 6 July 1992
APAM 5 AGRICULTURAL PROJECT ANALYSIS AND MANAGEMENT 31st August - 2nd October Closing Date 6 July 1992
MANAGEMENT OF RURAL DEVELOPMENT 12th October - 11th December Closing Date 17 August 1992

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26	24	21	25	23	27	25
27	25	22	26	24	28	26
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	29	26	30	28		30
	30	27		29		31
	31	28		30		
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		31				

To nominate participants or make further enquiries write direct to the Managing Director, MAMC, P.O. Box 25, Whitlame, Tasarfund

P.O. Box MP167
Mount Pleasant
Harare, Zimbabwe

Telephone: 303211
Telex: 26580 UNIVZ ZW
Telegrams: UNIVERSITY
Fax: (263-4) 732628

Centre for Applied Social Sciences



UNIVERSITY OF ZIMBABWE

M.Sc. in Tropical Resource Ecology

PROGRAMME

This full-time programme extends over two academic years, and comprises a coursework and a research component. The coursework component consists of four core courses, which all participants take, and five optional courses, of which a student takes two:

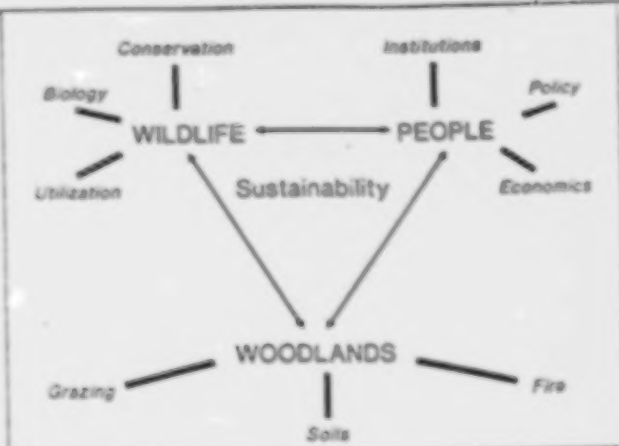
Core courses: Survey and Experimental Design, Data Analysis and Presentation, Ecology of Tropical Environments, Social Ecology.

Optional courses: Policy and Management, Soil and Plant Ecology, Wildlife Ecology, Environment and Development, Special Topics.

COURSE OBJECTIVES

The programme aims at providing vocational training for careers in areas of employment such as Ecosystem Management and Conservation, Natural Resource Evaluation, Wildlife Management, Environmental and Social Impact analysis, etc. The emphasis is on an interdisciplinary approach to resource ecology, use, management, and conservation in developing tropical countries. The programme also provides a grounding for those wishing to pursue research careers.

Emphasis is placed on self-directed learning through identifying problems, determining their nature and context, and seeking solutions to them.



COURSE CHARACTER

The course enjoys an international reputation, attracts students from many countries and has been a training ground for nearly twenty years. The United Nations Environment Programme has identified the teaching departments involved in the course as one of Africa's Regional Centres of Excellence in Environmental Education.

APPLICATIONS AND FURTHER INFORMATION

Application forms and copies of the course regulations are available from the Senior Assistant Registrar (Academic) and further details on the course are available from The Course Coordinator, M.Sc Tropical Resource Ecology, Department of Biological Sciences, both at the following address:

University of Zimbabwe,
PO Box MP167,
Mt Pleasant,
Harare, Zimbabwe

PROGRAMME

The programme extends over two academic years, normally starting in April of Year 1 and ending in November of Year 2, and comprises a coursework component and a research component. The coursework component consists of four core courses, which all participants must take, and five optional courses, of which a student takes two. The core courses are:

Survey and Experimental Design (including methods of natural and social sciences; philosophy of science; planning research projects; experimental design; review of basic statistics);

Data Analysis and Presentation (advanced analysis of quantitative and qualitative data; univariate and multivariate statistics; use of computerised statistical packages; introductions to computer applications in modelling, systems analysis, expert systems, risk analysis and decision analysis; seminar preparation and presentation; scientific writing);

Ecology of Tropical Environments (nature of tropical environments: climates, geology, geomorphology, pedology, and hydrology; tropical vegetation formations and associated faunal communities; dynamics of tropical ecosystems; conservation and development issues; introduction to environmental impact assessment);

Social Ecology (interactions between people and their natural environments; human demographic trends and their consequences; cultural, economic and ecological perspectives on society/environment interactions; indigenous technical knowledge in resource use and management; introduction to natural resource economics; social impact analysis).

The optional courses are:

Soil and Plant Ecology (including methods in plant ecology: surveys, description and monitoring; plant demography; determinants of vegetation change; tropical soil ecology and management; soil loss and changes in soil properties; vegetation use and management, including shifting agriculture, agroforestry, grazing systems; fire ecology and management; resource inventory and assessment; land capability classification);

Wildlife Ecology (structure and dynamics of wildlife populations and communities; soil-plant-herbivore interactions; concepts of carrying capacity, stocking rate, and sustained yield harvesting; population modelling; management of mixed-species communities; ecology and economics of wildlife use);

Policy and Management (patterns of land use and resource allocation; involvement of people in resource management; land use planning; evaluation of social impacts in policy formulation and project management; resources and the law; integrated resource development and management);

Environment and Development (theories of development related to society/environment interactions; the application of ecological theory to human populations; extended concepts of social ecology; theories of development and underdevelopment; impact of development projects and programmes; the issues of sustainability and equity).

Posgrados dentro de la Región

• Maestría en Medio Ambiente y Desarrollo Integrado

El Proyecto Interdisciplinario de Medio Ambiente y Desarrollo Integrado (FIMADI) del Instituto Politécnico Nacional (IPN), ofrece la maestría en Medio Ambiente y Desarrollo Integrado.

El FIMADI tiene como objetivo difundir métodos y técnicas para lograr el aprovechamiento del potencial que ofrece el medio ambiente para un desarrollo sustentable, a través del manejo integrado de los recursos naturales, tecnológicos y culturales.

La Maestría en Medio Ambiente y Desarrollo Integrado del IPN tiene el propósito de formar recursos humanos de alto nivel, capaces de proponer soluciones alternativas frente al deterioro del medio ambiente y sus efectos sociales. El programa inicia con un curso propedéutico de un semestre, seguido de cuatro semestres de posgrado con orientación en los siguientes módulos: Medio Ambiente, Desarrollo, Metodología de la Ciencia y Seminarios.

Los aspirantes al posgrado pueden proceder de cualquier área del conocimiento de las ciencias naturales o sociales.

Informes:

Directoría FIMADI, Sección de Graduados
ESE/IPN. Plaza de Agua Prieta No 66, 3o.
Piso, Col. Santo Tomás, CP 11340 México
D.F. México Tel: 541-17-33.

• Metodologías de Investigación en Biología Marina.

El Instituto de Asuntos Marinos (Institute of Marine Affairs), fundado en Trinidad y Tobago en 1976, ofrece programas de entrenamiento y formación a nivel de posgrado en Metodologías de Investigación en Biología Marina y en Óptica en Biología Marina. Asimismo, lleva a cabo actividades de investigación y desarrollo en los siguientes campos especializados:

- Oceanografía Química y Biológica.
- Peces y Marnas y Acuicultura.
- Geología Marina (geología costera).
- Manejo de Recursos Costeros y Marinos.
- Legislación Marina y Legislación Ambiental.
- Educación Marina (desarrollo de currículum).
- Sistemas de Arrecifes de Coral y Manglares.
- Evaluación de Impacto Ambiental.
- Productividad Marina.
- Contaminación Marina y Costera.
- Química Analítica.

Informes:

Alan Duncan, Chief Information Officer,
Holling Lane, Chaguanas P.O. Box
3040, Carriacou Post Office, Trinidad and
Tobago, W.I.



Formación
Ambiental



• **Posgrados en Manejo Ambiental y de Recursos Naturales**

El Centro para el Manejo de Recursos y Estudios Ambientales (CERMES) de la Universidad de las Indias Occidentales en Barbados, ofrece cursos en medio ambiente y manejo de recursos, incluyendo unidades de estudio en teoría y principios ambientales, manejo de ecosistemas acuáticos y técnicas de investigación y evaluación del impacto ambiental. Asimismo, lleva a cabo programas de Maestría con especialidad en manejo de pesquerías, manejo de zonas costeras, alternativas energéticas y ecosistemas terrestres.

Informes:

Dr. E. Moore, Project Director, CERMES,
University of West Indies, P.O. Box 64,
Bridgetown, Barbados.

• **Maestría en Ecología.**

La Facultad de Química de la Universidad Autónoma del Estado de México, conjuntamente con el Centro Panamericano de Ecología Humana y Salud (ECO), ofrece una Maestría en Ecología con una duración de dos años. Está dirigida a egresados de ciencias químicas, biológicas, ingeniería, veterinaria, geografía y medicina.

La estructura de la Maestría contempla 15 materias del área químico-biológica, ecología y seminarios de investigación, aunado a la realización de una tesis.

La Maestría, contempla la formación de especialistas que puedan trabajar en estudios interdisciplinarios y que sean capaces de analizar, diagnosticar, prevenir y controlar los problemas ambientales y de salud originados por el desarrollo económico y social.

Informes:

Facultad de Química, Universidad Autónoma del Estado de México, P.O. Box 7,
Paseo Toltecain 161, CP 2000, Toluca,
Edu. de México, México.



The Banff Centre
for Management

Analysis of resource management alternatives requires addressing tough trade-offs between economic and environmental interests.



VALUING NATURAL RESOURCES

SEPTEMBER 15 - 20, 1991

Assessing Environmental Trade-offs

Throughout North America, politicians are considering bold new steps to address environmental problems of air and water quality, ozone depletion, species protection, and storage of hazardous wastes. Public support for these initiatives is high, but polls show that the public also wants to expand employment opportunities and to avoid any additional taxes. The stage is set for conflict: between preserving the environment and enhancing traditional economic development; between market valued uses of the environment and nonmarket uses; between the needs of current interests and those of future generations.

This seminar will provide a framework for assessing trade-offs between competing uses of the environment. It will emphasize the strengths and limits of evaluation techniques developed over the past twenty years by economists, decision analysts, and psychologists. However, the assessment of environmental trade-offs occurs within a complex policy environment, as illustrated by the recent Alaskan oil spill or by Canadian/U.S. disagreements over the control of acid rain. Thus, the course will look beyond techniques to address their implications and issues that arise when interpreting and implementing the results of valuation strategies.

Questions to be answered

- What distinguishes a complete assessment of environmental resource values?
- What components generally are omitted from monetary evaluations of resource use?
- What methods exist for making defensible trade-offs between costs or lives and concerns such as equity, aesthetics, or the values of future generations?
- How valid or reliable are survey and interview measures of environmental values?
- How can uncertainty and perceived risks be incorporated into environmental assessments?

Key topics include:

- Placing evaluation techniques in the context of environmental management decisions
- Integrating concerns for human health effects with impacts on animal and plant populations in the natural environment
- Understanding the use and limitations of travel cost, contingent valuation, and hedonic pricing techniques to assess environmental values
- Comparing development and preservation options for use of the natural environment
- Using decision and risk analysis to structure complex resource management issues
- Integrating economic considerations with values for visibility, scenic beauty, or landscape quality

These topics will be applied to the following resource areas:

- Forest resources
- Wildlife resources
- Fisheries resources
- Landscape and wilderness areas

Who should attend?

The workshop is designed for resource analysts and decision makers concerned about environmental management issues. Employees of government and private industry dealing with problems of forest management, transportation, fisheries enhancement, recreation and energy will find the program useful. Individuals from native bands, consulting firms, and engineering companies concerned with environmental impact assessment uses and methods will also find the program directly relevant to their work.

Upcoming Resource Management Programs

Business and the Environment

October 6 - 10, 1991

Complete Communication

October 27 - November 2, 1991

Ecotourism

October 31 - November 1, 1991

Native Canadian Relations

November 17 - 22, 1991

Geographic Information Management for Municipalities and Regional Planning

November 24 - 30, 1991

Fostering Sustainable Economic Development Through Community Leadership

January 5 - 10, 1992

Advanced Environmental Dispute Settlement

January 19 - 24, 1992

GIS for Integrated Resource Planning

February 2 - 8, 1992

Fisheries Management

February 9 - 15, 1992

For other information or to register, please contact:

Carole Niemy, Program Coordinator
Resource Management

The Banff Centre for Management

Box 1020

Banff, Alberta T0L 0C0

CANADA

Telephone (403) 762-6327

Fax: (403) 762-6422

For specific content information, please contact:

Robin Gregory

Course Director

Telephone (503) 485-2400

Fax: (503) 485-2403

The Scholarship Fund

The Banff Centre has scholarship funds for the purpose of granting tuition scholarships to assist potential participants who are unable to attend for financial reasons. Financial assistance will be awarded on the basis of need and the adjudged value of the seminar to the individual and/or organization.

Applicants wishing to apply for scholarship assistance should write directly to The Banff Centre providing a letter detailing the amount of assistance and your circumstances.



International Centre for Ocean Development
Centre international d'exploitation des océans

COURSE ANNOUNCEMENT

MARITIME BOUNDARY DELIMITATION

University of Toronto
Erindale Campus
Mississauga, Ontario
CANADA

May 11 - June 27, 1992

BACKGROUND

As a consequence of the United Nations Convention on the Law of the Sea, all Coastal and Island States have acquired rights over extensive zones of jurisdiction in ocean space. An important task confronting these states is to define and delimit their new national maritime boundaries; a task inevitably involving legal and technical negotiations with one or more neighbouring states. Data collected during hydrographic and bathymetric surveys constitutes an essential ingredient in the compilation of nautical charts and other documents used in the establishment of baselines and various offshore limits as well as in the boundary negotiations process. However, most developing countries do not presently have the required indigenous technical expertise to develop and support their national position in this field.

MARITIME BOUNDARY COURSE

In response to the needs of developing countries for the training of technical management personnel in this field of activity, the International Centre for Ocean Development (ICOD) is sponsoring a seven-week course in "Maritime Boundary Delimitation". The next course will be held from May 11 to June 27, 1992 at the Centre for Surveying Science, University of Toronto, Erindale Campus, Ontario, Canada.

The course has been designed to provide training to hydrographers, land surveyors and marine scientists in the technical aspects of offshore boundary delimitation and the methodologies used in the determination of various offshore limits. The main objectives have been established with a view to giving the participants adequate background and practical training in:

- (a) bathymetric and hydrographic surveys and geomorphology of the oceans;
- (b) technical support in boundary negotiations;
- (c) management of the coastal zone and related activities; and
- (d) construction and delimitation of offshore boundaries and zones of jurisdiction.

SPONSORSHIP

The course is sponsored by the International Centre for Ocean Development (ICOD), a Canadian Crown Corporation, whose headquarters is in Halifax, Nova Scotia. ICOD's mandate includes the enhancement of indigenous expertise in developing coastal and island countries in the field of ocean resource management and development.

ICOD will offer full sponsorship to the nine selected participants. Sponsorship covers travel costs, living expenses and accommodation in Canada, tuition, cost of course materials and field trips.

PARTICIPATION CRITERIA

The course is structured for hydrographers, land surveyors and marine scientists who have a solid background in the fields of surveying or oceanography, combined with fairly extensive practical experience gained with a national government agency. Personnel who will derive the maximum benefit from the course are those holding senior or middle-management positions and are likely to be associated with the ocean boundary making process and negotiating delegations of their respective governments.

APPLICATIONS AND SELECTION PROCEDURE

Enrolment will be limited to nine participants selected according to the criteria specified above, as well as geographical considerations.

Nominations are required to be made by the concerned government agencies or departments and, in order to facilitate selection procedures, it is important that all applications include:

- (a) a detailed curriculum vitae of the candidate describing his/her academic and work history, including proficiency in English;
- (b) a letter of reference from the nominating authority; and
- (c) a statement from the nominating authority/government agency indicating the importance of maritime boundary delimitation and need for training technical personnel at this time.

DEADLINE FOR APPLICATIONS

The closing date for applications is December 31, 1991. Applications and enquiries should be addressed to :

Rear Admiral D. C. Kapoor
Centre for Surveying Science
University of Toronto, Erindale Campus
Mississauga, Ontario
Canada L5L 1C6

Telephone: (416) 828-3862
Facsimile: (416) 828-5273



Government Institutes, Inc.
 4 Research Place, Suite 200
 Rockville, MD (Washington, D.C.) 20850 U.S.A.
 (301) 921-2345; FAX (301) 921-0373

Please note
 our New Address &
 Phone Number!

Environmental Training Schedule, September 1991-March 1992

To help you plan and budget for your educational requirements, Government Institutes, Inc., is offering these programs during 1991-1992. The course dates, locations and prices announced in this schedule are confirmed, but minor changes may be made as needed. To register for any of these programs or to obtain more information, please fill out the registration form on page 8 or simply call our Education Department at (301) 921-2345 and charge your training investment to your credit card. Additional course topics, dates and locations will be added in the coming months — please call our Education Department to find out about the newest additions to our 1991-1992 Training Schedule.

**Environmental Training:
 Requirements, Strategies, and Resources
 for Environmental Managers & Trainers**
 December 3-4 • Washington, DC • \$895
 15 CEUs, Level 2

Helps you understand your legal requirements for training as well as the components of a cost-effective environmental training program. You learn who on your staff should be trained; what kind of training they need; how often they should be trained; what types of training resources — from both public and private sources — are available for your use; and more.

**Environmental Reporting &
 Recordkeeping Requirements**
 December 5-6 • Washington, DC • \$895
 13 CEUs, Level 2

Most of the major environmental laws have strict—and often complicated—reporting and recordkeeping requirements. Also, reporting and recordkeeping violations are usually the easiest for inspectors to spot, so enforcement activities are high in this area. Attend this course to learn from legal and industry experts how to handle the overlapping and sometimes conflicting provisions of these laws, and learn to organize your internal systems and procedures for cost-effective compliance.

**Environmental Audits: Protecting
 Your Company and Yourself**
 October 16-17 • Washington, DC • \$895
 January 22-24 • Orlando, FL • \$895
 15 CEUs, Level 2

Learn what to look for during an audit, what questions to ask, the legal requirements for environmental audits, how to establish auditor qualifications, and how other companies are successfully using environmental audits as a self-protection tool. Course instructors include some of the nation's top environmental auditors, including the authors of the course textbook, the *Environmental Audits Manual*.

**Identification of Regulated
 Hazardous Wastes**
 March 26-27, 1992 • Arlington, VA • \$895
 12 CEUs, Level 3

Explore in detail the key question you must address in hazardous waste management and compliance: do your wastes fall under the regulatory umbrella of RCRA? Discuss the significance of the definitions of hazardous and solid wastes and the impact of those definitions on your discarded materials, mixtures, manufactured by-products, and recycled materials. Understand the types of recycling activities that may exclude your wastes from being regulated.

**CERCLA/Superfund Laws &
 Regulations**
 October 3-4 • Washington, DC • \$895
 February 6-7 • Marina del Rey, CA • \$895
 13 CEUs, Level 2

Examines the original CERCLA and the Superfund Amendments and Reauthorization Act (SARA) and how the law affects environmental managers' compliance strategies and the responsibilities of PRPs. Tougher clean-up standards, increased fines and penalties for spill or release reporting violations, PRP strategies, and important new Emergency Planning and Community Right-To-Know provisions are just a few of the topics discussed at this course.

**Ground Water Hydrology: A Practical
 Course for Industrial Managers &
 Non-Hydrogeologists**
 October 8-9 • Columbus, OH • \$795
 December 12-13 • Washington, DC • \$795
 11 CEUs, Level 1

This comprehensive course examines the ground water regulatory requirements, ground water hydraulics, geology and contamination. You will learn how to conduct a ground water investigation and how to develop a ground water monitoring plan. This course offers vital information on corrective actions for ground water contamination and ground water management issues and strategies.

Environmental Management Roundtable
February 1992 • Orlando, FL • \$895
15 CEUs, Level 2

A roundtable discussion with some of the world's leading environmental management authorities. Explore the common concerns and special challenges facing those charged with environmental management responsibilities. The interaction at this course is unique and provides a valuable learning experience. Receive the *Environmental, Health & Safety Manager's Handbook* as your course text.

RCRA Regulations Course
October 1-2 • Washington, DC • \$895
February 4-5 • Marina del Rey, CA • \$895
14 CEUs, Level 2

A practical analysis of the Resource Conservation & Recovery Act. This course provides attendees with a comprehensive understanding of the latest developments in hazardous waste regulations. The course speakers — experts from the law firm of Crowell & Moring plus key technical authorities — have been rated "excellent" by 93% of previous registrants. The course text is the nationally recognized *RCRA/Hazardous Waste Handbook*.

1991-92 Update on RCRA Regulations
October 29-30 • Washington, DC • \$895
March 24-25 • Washington, DC • \$895
13 CEUs, Level 2

Designed for those already familiar with the basic Resource Conservation and Recovery Act law and regulations, but who need an update on the latest developments. Expert instructors, who work daily in the field, give you current information on developments concerning the schedule of the EPA land ban; the definition and listing of hazardous wastes; the regulation of underground storage tanks; and new EPA enforcement priorities and strategies.

Federal Facilities Environmental Update '92
January 28-29 • Washington, DC • \$895
12 CEUs, Level 2

Designed for both government contractors and employees, this course covers the major compliance and enforcement initiatives of government-owned, contractor-operated facilities. Our instructors will share their insight into the current issues and projected trends at both DOD and DOE facilities, including focused sessions on hazardous waste management and practical compliance approaches for federal facilities. You will also learn about the increased number of enforcement activities at federal facilities and practical ways to protect yourself from liability.

**Underground Storage Tanks:
Smart Management & Engineering
Applications**
December 10-11 • Washington, DC • \$895
14 CEUs, Level 2

Specially designed for those who are responsible for UST management, operations, maintenance, engineering and/or installation at their facilities. Learn about the new EPA regulations and performance standards for your tanks; how to predict if your tanks are leaking; how you should monitor your tanks for leaks; how to buy and install new tanks; and how to cost-effectively manage your existing tanks. Government Institutions' *Underground Storage Tank Management* is the course text.

**Fundamentals of Aboveground Storage Tanks:
Choosing Between Underground and Aboveground
Tanks**
December 5 • Washington, DC • \$495
8 CEUs, Level 2

This course will take you step-by-step through the decisions you face in choosing underground or aboveground tanks (AGST). The course instructors share with you a side-by-side comparison of the technical, economic and regulatory benefits/drawbacks of AGSTs vs. USTs; an understanding of all current federal regulations and industry codes you must comply with; and a practical examination of the latest techniques and technologies for AGST leak monitoring and containment. The course text is *Aboveground Storage Tank Management*.

Industrial Environmental Markets
March 3-4 • Washington, DC • \$895
10 CEUs, Level 2

Identifying the new opportunities in the multi-billion dollar industrial market can be the key to success for many firms providing environmental equipment and services. Learn at this practical conference how the recent changes in the Clean Air Act, RCRA, the National Primary Drinking Water Rule, and the Superfund National Contingency Plan (NCP) will affect industrial expenditures. Use this knowledge to develop a winning market strategy for your company.

Federal Environmental Markets
March 5-6 • Washington, DC • \$895
13 CEUs, Level 2

The federal government needs contractors to help bring government facilities into compliance. Find out what federal markets there are for your services and equipment at this practical conference. Learn what is important to the agencies within the federal government so you can save time and money on your proposals while increasing your chances of being awarded the contract.



*Tufts University*

Dr. Richard Wetzel
The Center for Environment
Tufts University
Curtis Hall
474 Boston Avenue
Medford, MA 02155, USA
Tel: 617 - 381 3531

**UNEP - TUFTS UNIVERSITY
INTERNATIONAL POST-
GRADUATE
COURSE IN ENVIRONMENTAL
MANAGEMENT FOR
DEVELOPING COUNTRIES.**

INTERNATIONAL POST-GRADUATE COURSE IN ENVIRONMENTAL MANAGEMENT
FOR DEVELOPING COUNTRIES AT THE TUFTS UNIVERSITY FROM SEPTEMBER
TO DECEMBER 1991, 1992 AND 1993



United Nations
Environment Programme
UNEP

Dr. Michael Atchia
Chief, Environmental Education and Training Unit
United Nations Environment Programme
P.O. Box 30552/47074
Nairobi, Kenya

OBJECTIVES OF THE COURSE.

To provide training in specialised areas of environmental management for personnel from governments, institutions and the private sector in developing countries.

COURSE COMPONENTS.

The course is divided into three components:

1. THE CORE CURRICULUM

A. Introductory studies

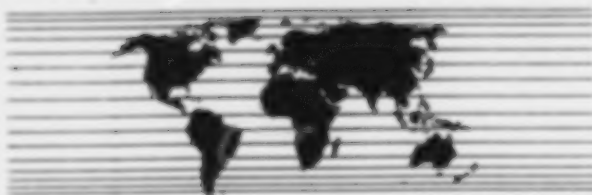
- *Environmental management
- *Natural resources
- *Sustainable development
- *Recent trends, strategies, programmes and plans in the field of environment and development.

B. Process and pattern in the environment and related management issues

C. Tools of environmental assessment and management.

2. SPECIALIZED STUDIES

- a) Climate change and atmospheric pollution
- b) Fresh water depletion, contamination and management
- c) Coastal zone and oceanic resource management
- d) Land degradation (toxicity, erosion, desertification)
- e) Conservation of biological diversity
- f) Management and regulation of transboundary movement of hazardous wastes and international trade in toxic chemicals
- g) Risk communication in waste management
- h) Monitoring and instrumentation technology
- i) Assessment of human health response to environmental toxins
- j) Environmental planning and management of urban areas
- k) Politics of the environment and environmental ethics
- l) Environmental law and diplomacy

3. TEAM RESEARCH PROJECTS

The University of Montana

School of Forestry / Montana Forest
& Conservation Experiment Station
Missoula, Montana 59812-8963 USA
(406) 243-5521
FAX (406) 243-4510

International Resource Management in the 21st Century: A Global Challenge

As we approach the 21st century, demands for resource utilization and economic growth increasingly conflict with efforts to preserve wilderness, maintain biological diversity and protect the global environment. Decisions regarding these complex and competing demands must also be made within the context of an interdependent global economy and rapidly changing job market. Managing natural resources requires individuals who have a broad understanding of socioeconomic, cultural and political issues, as well as technical expertise in resource management.

International Resource Management at The University of Montana

In 1990, the School of Forestry established an interdisciplinary undergraduate specialization in international resource management. This unique specialization combines an applied field internship with courses in natural resources, social sciences and foreign languages. It also draws upon the similarities among many Third World countries and resource-dependent states, such as Montana. University of Montana faculty members designed the specialization with a grant from the U.S. Department of Education's Fund for the Improvement of Post-Secondary Education (FIPSE).

What the study of international resource management entails

Undergraduates specializing in international resource management complete a bachelor's degree in one of the following areas:

- resource conservation
- forest resources management
- range resources management
- wildlife biology
- recreation management

Students also complete two interdisciplinary courses: "Sustainable Resource Development" and "Social Forestry" and select courses in the following areas:

- cross-cultural studies
- sociology and development administration
- environment and geography
- ethics and religion

Students are also encouraged to study a foreign language, preferably Spanish or French.

Opportunities for practical field experience

As part of the specialization, students complete a natural resource-related internship in a cultural setting different from their own in either the United States or a foreign country. Internships are developed in collaboration with governmental agencies, local community leaders, international voluntary organizations, industry, consulting firms and independent researchers.

Examples include:

- assisting U.S. Agency for International Development officers with forest conservation and wildlife management in Madagascar
- working with native American foresters, range managers and wildlife biologists in northwestern Montana
- serving in research programs with international conservation and development organizations

Job opportunities

Employment opportunities in international resource management are available in both the public and private sectors. Furthermore, employers increasingly recognize the importance of social science skills and international experience in resource management in general. UM provides students specializing in international resource management with career placement assistance. Professional opportunities are available with resource conservation and development agencies, the Peace Corps and other public and private organizations. Specializing in international resource management also provides an excellent foundation for advanced study at the master's or doctoral level.



Reasons for studying international resource management at UM

The UM School of Forestry's specialization in international resource management is unique in that it combines professional training in forestry, range management, wildlife biology or recreation management with international social science studies and practical field experience. The University of Montana has strong liberal arts and science programs and a respected accredited School of Forestry. The University has produced an exceptionally high number of Rhodes Scholars (25) and Peace Corps volunteers for a school of this size, which attests to its high quality faculty and their dedication to undergraduate education.

UM is in Missoula (population 60,000), in the heart of the northern Rocky Mountains. The academic buildings, University Center and dormitories form a distinct campus that is within a short walk of the downtown area. UM is also close to Glacier and Yellowstone National Parks and many other wilderness areas and recreational opportunities.

The School of Forestry maintains the 28,000-acre Lubrecht Experimental Forest and the 3,400-acre Band Ranch where agroforestry research may be conducted. The U.S. Forest Service, Fish and Wildlife Service and National Park Service have cooperative research stations on campus.

For more information about international resource management at UM, contact:

Dr. Stephen F. Seibert, Coordinator
International Resource Management
School of Forestry
University of Montana
Missoula, MT 59812
(406) 243-4061 or (406) 243-6657

**NEW YORK UNIVERSITY**

A private university in the public service

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New York, NY 10036
USA

ENVIRONMENTAL MANAGEMENT

SEMINARS AND COURSES

Designed to help you meet today's environmental challenges in:

- Business Management and Marketing
- Regulations and Compliance
- Asbestos Management
- And more

Environmental issues are no longer of concern only in a few "smokestack" industries. Today, all businesses are affected by environmental challenges and attempts by government to regulate those challenges. The successful management of these environmental concerns requires increasingly sophisticated knowledge, planning, and techniques. Through intensive courses and seminars taught by top experts in the field, NYU's Environmental Management Programs are designed to provide exactly that. Learn what you need to know to respond to a range of environmental issues: compliance with stunningly complex and expensive regulatory measures; consumer demand for environmentally sound products and clean technology; solid waste management issues; and mastering the new environmental economics so that you and your firm can reduce risk and increase revenues.

BUSINESS AND THE ENVIRONMENT

In business today, the environmental factor is rapidly growing from solely a regulatory concern to a powerful marketplace reality. Indeed, the economic survival and profitability of a company will ultimately depend on how all its executives and employees meet environmental challenges in this decade.

These new interdisciplinary courses are designed to help managers identify and incorporate proactive environmental practices in a wide range of business operations. They are particularly appropriate for individuals in:

- strategic planning and development
- corporate environmental affairs
- product and packaging development
- marketing, advertising, public relations
- consumer and public affairs
- corporate communications

These courses—the first in a unique series—offer the insight, information, and tools you need to meet the extraordinary business demands of the decade of the environment. Call (212) 998-7219 for more information.

ENVIRONMENTAL REGULATIONS AND COMPLIANCE

More and more business and societal activities are subject to environmental regulation, and the management of environmental concerns requires increasingly sophisticated knowledge and techniques. A new industry using new technologies has evolved to meet the needs for compliance with government regulations. Corporate managers must understand increasingly complex and expensive regulatory measures. They must learn about planning, implementing and reporting, complex applications for permits, keeping current with new amendments and regulatory changes, and sorting out federal, state, and local requirements. These seminars and courses present the latest information on current environmental regulations, compliance strategies, implementation strategies, and liability concerns. Call (212) 790-1344 for more information.

HAZARDOUS WASTE MANAGEMENT

Hazardous waste management is a complex and demanding technical specialty. These seminars and training programs have been developed for compliance with government regulations regarding health and safety as well as the management, storage, and transportation of hazardous waste.

ASBESTOS TRAINING PROGRAM

New York University/The Real Estate Institute, in association with Warren & Panzer Engineers, PC, offers a comprehensive series of asbestos EPA AHERA/NYCOEP/NYSDOH training courses and control seminars.

These seminars have been approved by the Environmental Protection Agency (EPA) under Section 208 of the Toxic Substance Control Act (TSCA) in U.S.C. 2646 NYS Department of Health, and the NYC Department of Environmental Protection.

For further information, please write or call: Asbestos Training Program, NYU Midtown Center, 11 West 42nd Street, New York, NY 10036; (212) 790-1345.



CENTER FOR INTERNATIONAL
DEVELOPMENT RESEARCH

PROGRAM IN INTERNATIONAL DEVELOPMENT POLICY 1992-93

DUKE UNIVERSITY
INSTITUTE OF POLICY SCIENCES
AND PUBLIC AFFAIRS

Betsy Merideth, Executive Administrator
Center for International Development Research
Duke University
211 Old Chemistry Building
Durham, NC 27706 - USA

INTRODUCTION

The Program in International Development Policy (PIDP) is designed for mid-career professionals with at least five years of experience in a development related field. PIDP Fellows come from diverse academic and professional backgrounds, and pursue varied research agendas related to sustainable economic development. The PIDP provides training in policy analysis through development policy seminars, graduate level coursework, workshops with technical specialists, and independent research.



PIDP APPROACH

Resource and environmental consequences of development are heavily influenced by decisions made within public, private, and international organizations in both industrialized and developing countries. Policymakers must consider the often subtle interactions among competing factors, the limited availability of accurate information, and the high costs associated with unsuccessful policy decisions. Within this complex decision-making environment, sound policy analysis is essential to balance the economic, social, political, and environmental interests and effects of development.

Development policy analysts confront the challenge of obtaining training that addresses the applied issues facing real-world policy makers. In contrast to most graduate programs in the development field, the PIDP is structured to cross the boundaries of academic, technical, managerial, and professional training. PIDP fellows receive a firm grounding in development theory and policy analysis, and choose graduate level courses that supplement their research. Fellows pursue collaborative research agendas and produce policy white papers that develop recommendations for policy design and restructuring policymaking institutions. The policy white papers and case studies are published as books and training materials.

Development Policy Seminars

The two development policy seminars form the core of the PIDP and are attended by all PIDP participants. The seminars provide rigorous theoretical training, yet remain grounded in pragmatic policy analysis and case studies. The development policy seminars are led by Duke faculty with expertise in economics, public management, political science, and natural resource management.

In 1992-93, the seminar topics will be:

Sector seminar: The Problems of Mega-Cities and the Balance of Urban and Rural Development

Issue seminar: The Role of the State in Sustainable Natural Resource Exploitation

The seminar on **The Problems of Mega-Cities and the Balance of Urban and Rural Development** focuses on:

- reforming the policy distortions that typically favor urban over rural development
- establishing stronger, decentralized institutions to develop a more viable network of market towns and secondary cities to stabilize the population living outside of the major metropolis
- reinforcing the community development institutions within large cities
- reforming the labor laws and wage policies to promote productive employment in the cities as well as in the countryside.

The seminar on **The Role of the State in Sustainable Natural Resource Exploitation** focuses on how national economic development can best be pursued through more rational decisions on the rate of resource extraction, strengthened land tenure, reforms in the scope and structure of state resource enterprises, and reforms in regulation and taxation to restore incentives for sustainable resource exploitation.

Additional Coursework

Besides the development policy seminars, PIDP Fellows may enroll in courses offered in other departments. In previous years, Fellows have utilized the resources of the professional schools at Duke, including the Fuqua School of Business and the School of the Environment. As well, they have pursued coursework in academic departments ranging from economics to civil engineering to sociology.

Degree and Non-degree Options

As a professional training program, the PIDP admits most of its Fellows as non-degree, or certificate, participants. Non-degree Fellows may participate in the program for either one or two semesters. Although applicants are encouraged to attend the program for the full eight months, some Fellows may be constrained by professional commitments that limit their participation to one semester.

PIDP Fellows with strong academic records may choose to pursue the Master of Arts degree in Development Policy. Fellows normally spend two academic years fulfilling the requirements for the M.A. Fellows with previous graduate degrees or a significant amount of graduate-level coursework may be eligible to complete the M.A. in one academic year; this decision is made by the Director of the PIDP during the application process.

ELIGIBILITY AND SELECTION CRITERIA

Skilled professionals with at least five years of experience in a field or position dealing with development policy issues are eligible for the Program in International Development Policy. Professionals with career experience in the following areas will find the 1992-93 PIDP emphasis of particular relevance:

- agencies and ministries concerned with:
 - environment and natural resource management
 - urban and regional planning
 - sustainable development
 - energy
 - industrial planning and development
 - oil and mining
 - public sector/private sector relations
- multilateral or national finance institutions
- international environmental agencies
- international development agencies
- oil or mining industries (public and private)

Applicants must have the academic background to undertake graduate-level work. We require official transcripts demonstrating completion of the Bachelor's degree or equivalent. Applicants must also demonstrate spoken and written proficiency in English to participate in the PIDP. Applicants whose first language is not English must submit current TOEFL scores. A minimum TOEFL score of 600 is expected; we will consider scores between 550 and 600 providing the applicant attends intensive English language training prior to arrival at Duke. Details on the TOEFL exam and registration forms are available at U.S. embassies and consulates as well as U.S. Information Agency offices.

The admission process is competitive, based equally upon the applicant's professional and academic credentials, the quality of the application essays, TOEFL scores, and independent recommendations. To receive an application packet, fill out and mail the detachable postcard at the back of this brochure, or write directly to: The Program in International Development Policy, 211 Old Chemistry Building, Duke University, Durham, NC 27706 U.S.A.

Applications/Admission Calendar

Application deadline	January 31, 1992
Notification of status	February 28, 1992
Deadline for acceptance of offer of admission	March 31, 1992



The Environmental Law Center was established in 1977 with the mission of educating environmental leaders to meet the environmental challenges of the Eighties. The challenges include the protection and enhancement of environmental quality and conservation of scarce resources recognizing the need, under specified circumstances, to develop those resources. Professionals must learn to plan, create, administer and enforce the legislation and regulations necessary to maintaining a decent environment.

In order to carry out its mission, the Center offers a graduate studies program, professional and continuing education, conferences and workshops, a summer program, and research and consulting services.

The Center is an offspring of Vermont Law School, a private independent school chartered in 1972 and fully accredited by the ABA. The School is located on the White River in the village of South Royalton.

GRADUATE STUDIES

The Environmental Law Center offers a graduate program for lawyers, planners, teachers, business and public administrators, and environmentalists who seek a basic in-depth knowledge of environmental law. The graduate studies program is an interdisciplinary, 30-credit program leading to the Master of Studies in Environmental Law (M.S.L.). The program may be taken in one full year, over the course of three summers when taken in conjunction with a law program, or on a part-time basis over five years.

Students take basic courses in environmental land use and water law. They also attend specialized courses in areas such as Ecology, Toxic Chemicals and the Law, Environmental Planning and Management, Ecology, and Land Use Economics. In addition, students take traditional law courses in the Law School such as Torts, Property and Administrative Law. Included in the program are internships offering students firsthand field experience with environmental problems, and alternative dispute resolution courses.

For candidates of a J.D. degree program at Vermont Law School and elsewhere, the Center offers a Joint Degree Program. Students can earn both the J.D. and the M.S.L. degrees in three years by participating in the summer program for two years.

ENVIRONMENTAL LAW CENTER
OF THE
VERMONT LAW SCHOOL
SOUTH ROYALTON, VERMONT 05758
USA

PROFESSIONAL AND CONTINUING EDUCATION

The Environmental Law Center sponsors conferences, workshops, and short courses on a variety of environmental law subjects. There are programs designed for the general public and others to serve professionals. Past conferences have covered topics such as environmental dispute resolution, rural land conservation, equity and the environment, growth control, and Environmental Protection: Is Regulation Working? In addition, the Center cosponsors an annual conference with the Vermont Natural Resources Council on an environmental issue of specific interest to Vermonters. The Center will assist in planning and management of conferences and workshops upon request.

RESEARCH AND CONSULTING

The Environmental Law Center's faculty and staff have adopted a series of areas of focus of research. These priorities include studies of toxic and hazardous waste, resource recovery, resource development of small-scale farming and forestry, and the effort to preserve and protect the aesthetic of both the natural and human-made environment.

The Center has performed research contracts for such clients as the Rhode Island League of Cities and Towns and the U.S. Dept. of Energy. Recent works include the Growth Area Research Project, a study of rapid growth areas in Vermont; the development of a Water Budget for the Ottauquechee River Basin, and a study of the Green Mountain National Forest Management Plan. A full description of the Center's research and publication activities can be obtained by writing the Director of the Center.

Through student internships and the activities of the faculty and staff, the Center maintains close ties with the environmental community of Vermont, New England, the United States and Canada.



SUMMER PROGRAM

Each summer, the Center offers a series of specially designed interdisciplinary environmental law courses and alternative dispute resolution courses. In addition to graduate school credit, the courses are approved for continuing legal education credit by the Vermont Bar Association. The summer session is also considered an integral part of the Center's M.S.L. program.

The six-week series of eight two- and three-credit courses is taught by Center and Law School faculty as well as visiting professionals and legal scholars. Internships may also be taken in the summer.

POST-GRADUATE
TRAINING COURSE
IN LIMNOLOGY

INSTITUTE OF LIMNOLOGY
AUSTRIAN ACADEMY
OF SCIENCES

MONDSEE and LUNZ/AUSTRIA

17th Course: March – December 1992

Sponsored by:

Republic of Austria

United Nations Educational, Scientific,
and Cultural Organization (UNESCO)



Institute of Limnology
Dr. Franz Neidl
Gaisberg 116
A-5310 Mondsee, Austria

Phone: 06232-40 79
-31 25
Fax: 06232-35 78
Telex: 11 26 28 oesw a

Number of participants: 12 (from different developing countries)

Course language: English

Aims of the Course:

to give an overall insight into the various problems of limnology, to familiarize with different techniques of field measurements, sampling, laboratory analyses and data evaluation, as well as to encourage a critical approach to limnological problems and to methods and results of research work – thus to make fellow limnologists better equipped for implementing necessary research in their home countries in order to find themselves solutions of their practical problems.

Structure of the Course:

- A. Basic Courses – several weeks with full day programme at Mondsee and at Lunz, consisting of lectures, demonstrations and practical exercises in the field and in the laboratory;
- B. Workshops – brief limnological investigations on a lake, pond or stream, focusing different limnological problems, performed by teams of participants under guidance of experts;
- C. Individual Practical Work – For a period, lasting 2 months, participants will be assigned to current research projects at different places in Austria, individually or in small teams. Special wishes and interests of participants will be taken into consideration in arranging these activities as far as possible within the aims and facilities of the training course. Each participant is expected to write a short scientific report on his work during this period;
- D. Excursions – to several lake and river sites and to establishments of economic use of waters such as fish cultivation, hydroelectric power stations, sewage treatment plants, drinking water reclamation and others.

As this training course does not lead to any academic degree, certificates are offered to the participants, attesting the attendance in the programme as well as special activities and individual accomplishments.

Main subjects of lectures and basic courses:

Physical and chemical properties and processes in lakes and rivers: morphology, water movements, light and heat, geo- and biochemical cycles, fundamentals of water quality assessment and control, composition and distribution of organism communities (bacteria, phyto- and zooplankton, macro- and microbenthos, fish) and their role and interactions in aquatic ecosystems; systematic and biological survey of principal taxa; approaches to the assessment of primary and secondary production; analysis of fish populations; limnological aspects of fisheries management; structure and functioning of different types of inland water ecosystems with respect to their natural environment and to human impacts.

APPLICATION REQUIREMENTS**Educational background:**

holding an academic degree in science, agriculture (aquaculture, fisheries) or in tertiary education from a university or another designated academic institution, being acquainted with the principles of physics and chemistry and having basic knowledge in plant and animal biology and systematics, as well as in genetics; having some practical experience in at least one special subject within the applicant's field of professional training.

Language proficiency:

good working knowledge of English: applicants from countries where English is not the regular medium of higher education have to submit an English language proficiency certificate issued by a recognized organization e.g. British Council.

Age: up to 35 years.

Health: physical and mental fitness, as well as absence of infectious diseases – to be attested by a dated health certificate in English.

Application form to be completed in full and clearly in person: participants in person will be distributed to the appropriate institutions of extended stay of this training course in the applicant's future destination, which should be given as precisely as possible, independently by the recommending authority as well as by the applicant himself. All required documents need not be supplied in duplicate, one copy of each is sufficient.

The application form must be sent to:
the Austrian Embassy/Ministry in charge of your country
(also Cultural Attache of Austrian Cultural Institute)
not later than October 31, 1991.

TERMS OF FELLOWSHIP

The Austrian Federal Government grants to every participant free tuition, health insurance and a scholarship of 7 500,- Austrian Schillings.

Furthermore, the Austrian government assumes the travel of participants from least developed countries (LDC), such as:
in Africa: Benin, Botswana, Burkina Faso, Burundi, Central African Republic, Chad, Equatorial Guinea, Ethiopia, Gambia, Guinea Bissau, Lesotho, Malawi, Mali, Niger, Rwanda, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Togo, Uganda;
in Asia and South America: Afghanistan, Bangladesh, Bhutan, Jordan, Laos, Nepal;
and from other countries having preference in Austrian development programmes: Angola, Costa Rica, Ghana, Guatemala, Indonesia, Kenya, Madagascar, Nicaragua, Switzerland, Thailand, Zambia, Zimbabwe.

The organizer is making efforts to provide funds from UNESCO to help finance the traveling expenses of participants from other countries not included in the above list.

Every participant must hold a passport valid for the duration of the course, and must arrange for visa formalities in his home country.

The organizer will arrange for air tickets from the participants' home country to Austria and back.

Accommodation arrangements will be made by the course administration. There are, however, no provisions for spouses. Due to frequent moving, participants are strongly advised not to bring along dependents. Participants should be ready to accept a student standard of living.

35

EUROPE



UNEP/UNESCO
INTERNATIONAL POSTGRADUATE COURSE
IN

**ENVIRONMENTAL MANAGEMENT
FOR
DEVELOPING COUNTRIES**

AT
DRESDEN UNIVERSITY OF TECHNOLOGY



Organized on a yearly basis a full-time post-graduate diploma course (October to July) at the Dresden University of Technology, for 20 participants (18 from developing countries) with Introductory and Background studies of the following 5 themes:

1. Ecology, soils, agro-systems, land-use planning, and forestry resources;
2. Water resources management;
3. Technology, industry and the environment;
4. Nature conservation, including the designation and management of protected areas;
5. Integrated management of local and national resources within the framework of global strategies,

and specialisation in dealing with the following environmental problems (defined by UNEP as major areas of concentration):

- climate change and atmospheric pollution.
- pollution and shortage of fresh water.
- deterioration of coastal areas and oceans.
- land degradation and desertification
- hazardous wastes and toxic chemicals.
- conservation of biological diversity.

Doz. Dr. Heiner Kluge

Dresden University of Technology
Faculty of Civil Engineering, Water Resources Management and Forestry
UNEP/UNESCO Course
Parkstrasse 5, Room 15-15, Dresden O - 8010, Germany
Tel.: (37) 51-4 95 56 07; Fax.: (37) 51-4 95 57 07; Telex: 2278 y teuni dd

INTERNATIONAL POST-GRADUATE COURSE
ON

HYDROLOGY

TWENTY-THIRD COURSE

1 February - 31 July 1992

BUDAPEST, HUNGARY



THE COURSE

BACKGROUND

All over the world water is at the heart of any plans for development. The abundance or scarcity and the quality of natural surface- and subsurface waters affect almost all aspects of urbanization, agriculture and industry, in different ways under different climatical conditions and at different levels of development. Knowledge about the natural laws governing the occurrence and behaviour of these waters - enabling optimal management of the same - is therefore of paramount importance for every nation in the world. However, while developed countries have piled up huge expertise during long periods with experiences in these fields, developing countries most often need transfer of such expertise for solving their own problems. An adequate number of well trained local personnel has been recognized as the basis of such kind of transfer. Well aware of this fact, the International Hydrological Decade (IHD) launched by UNESCO in 1965 has chosen as a major objective the promotion of hydrological training on an international scale, primarily geared towards developing nations. UNESCO has at the same time included among its activities the sponsoring of international courses aimed at spreading hydrological knowledge.

Hungary - well known for her achievements in water resources development in the course of the last hundred years - has been among the first countries to respond to the IHD initiative. VITUKI, the Hungarian water management's institution responsible for hydrological research, has announced its first UNESCO-sponsored "International Post-Graduate Course on Hydrological Methods for Developing Water Resources Management" as early as 1966. Up till 1974 such courses have been held on a bi-annual basis, from 1974 on annually, so that the course now being announced is thus the twenty-third in the series. These courses are Hungary's contribution to the International Hydrological Programme (IHP - continuation of the IHD), to assist developing nations of the world, and to international co-operation in hydrology in general. During the courses held so far a total number of 330 participants coming from 59 countries of the world have received training.

VITUKI
International Post-Graduate Course on Hydrology
H-1453 Budapest, PF.27.
Hungary

OBJECTIVES

The course's basic objective is to acquaint participants on a post-graduate level with advanced theoretical and practical hydrological methods used in developing water resources management. This goal is achieved in two steps. First, disciplines serving hydrological studies are reviewed, followed by thorough analyses of hydrological processes, the measuring thereof, as well as of their theoretical approaches. Second, using the gained knowledge as a base, it is shown how in the individual branches of water resources management the hydrological aspects should be approached and their related problems be solved.

With a growing awareness throughout the world of the importance of preserving the environment, it has been found necessary that the teaching of hydrology should be linked in all its relevant aspects with environmental protection. UNESCO has chosen this course as one of those courses requested to add environmental dimensions to its curriculum. In compliance with this request, as from the eighteenth course in 1987 the subject matter has been modified so as to reflect also an appropriate environmental emphasis.

Realizing that the practical application of the theoretical knowledge gained can only be learned through exercises, the course curriculum amply includes them. Further, an assessment of the study results is provided for through exam, essay and an individually written closing paper. A Certificate of Attendance is finally awarded on the merit of all these.

Achievements in Hungary in the field of water resources management - with particular reference to the involved hydrological aspects - are used as references in the course of the studies. Accordingly, numerous study tours are organized within the country with the aim of introducing these achievements.

It is also sincerely hoped that the participants gain a good knowledge during the course of their host country, Hungary, and that they leave with a liking developed for her people.

PERSONAL ADMISSION REQUIREMENTS

The course is open to any applicant coming from any country of the world who possesses basic knowledge in hydrology, fluid mechanics, geology and meteorology, as well as applied mathematics, mathematical statistics and systems analysis. The applicants must have completed a thorough training in the aforementioned subjects and hold a degree either in hydrological sciences, or civil engineering, or a related discipline from a university or other recognized institution of higher education. Minimum requirements are a B.Sc. degree or equivalent level of academic studies and two years' experience in the field of hydrology or in one of the branches of water management. Verified certificates proving these above are required.

Proficiency in verbal and written English is an essential condition of admission.

FINANCIAL ADMISSION REQUIREMENTS

The financial expenses an applicant has to meet to obtain admission to the course are as follows.

- a) *Participation fee*, US\$ 9000 covering instruction and practical training, the use of laboratory, computer, etc. facilities, expenses of received publications and of field trips, as well as medical care in Hungary for the whole duration of the course (but not, if leaving the country); accommodation, while a monthly allowance in the value of HUF 12,000 is provided for covering expenses of subsistence and of local transportation (canteen lunch at VITUKI and month-tickets for transportation are available). The participation fee is payable in advance by cheque, or by bank transfer.
- b) *Travel expenses* for round-trip air tickets from home country to Ferihegy Airport, Budapest, Hungary. The return ticket should be deposited at the course Secretariat (or the return air fare at the Hungarian Travel Agency, IBUSZ).

FELLOWSHIPS

If the applicant is unable to meet the above listed expenses he/she is advised to apply for a fellowship in the first place from own governmental resources. Fellowships may also be obtained from the United Nations and its specialized agencies through the local UNDP office, resp. at the representation of the concerned agency in the applicant's country. These may provide assistance either from their central budget assigned for training purposes, or from the training component of one of their current projects under execution in the applicant's country. Appendix 1 includes - as an information - addresses of some UN agencies (it should be noted that UNESCO is not included here, since its sponsoring of the course includes financial support put at the disposal of the Admission Board, and it does not accept personal fellowship applications for consideration). Beyond the aforementioned ways of applying for a fellowship the Course's Admission Board is also in the position to recommend applicants for fellowship to the governments of certain sponsoring countries, or to institutions or agencies who have offered to help in promoting water management in developing countries in that way.





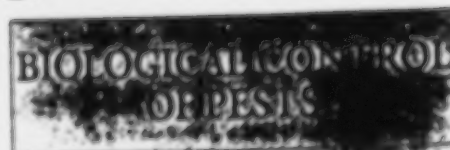
INTERNATIONAL AGRICULTURAL CENTRE
Agricultural University
Wageningen The Netherlands

1.
**INTERNATIONAL COURSE
ON INTEGRATED PEST
MANAGEMENT**

Formely,
International Course on Plant Protection

Wageningen/The Netherlands
March 22 - July 4, 1992

3.



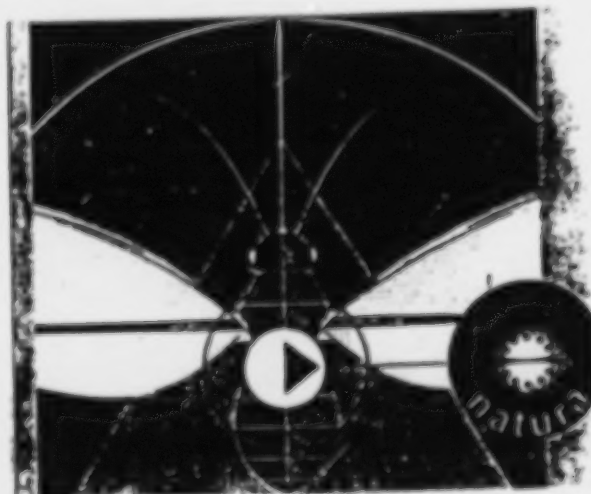
23 March till 10 April

1 9 9 2

2.
**INTERNATIONAL COURSE
ON DATA HANDLING FOR
TROPICAL FISHERIES MANAGEMENT**

Collection, processing and presentation
of catch, effort and biological data

Wageningen/The Netherlands
January 5 - February 15, 1992



Agricultural University
Wageningen The Netherlands
DEPARTMENT OF ENTOMOLOGY

1. INTRODUCTION

The protection of plants, by combatting the negative effects of diseases, pests and weeds on crop production, is of major importance for food security in developing countries. This is particularly true for areas where increased productivity is needed in order to achieve adequate food supply for the many that are malnourished. The aim of plant protection, however, is not to ensure maximum production, but optimum production in an economical sense.

Pesticides form an important means to control diseases, pests and weeds. Despite the widespread use of pesticides, pest damage causes significant yield loss in most agricultural systems. The worldwide pre-harvest crop losses caused by pests, diseases, rodents and weeds are estimated by FAO to be in the order of 30-35%. With the rapid growth of pesticide resistance in insects, pathogens, and weeds, these losses are likely to increase. To combat this trend it is essential to design programmes of pest management that depend on the intelligent integration of various control measures and not on chemical control alone. The increased awareness of the environment and the occurrence of accidents with pesticides support this strive against the injudicious use of pesticides.

To implement these new programmes a range of techniques that may be used by farmers is already available. The techniques include the use of various cultural practices such as crop rotation, multiple cropping, timing of planting and harvesting, further habitat management that enhances natural enemy populations, biological control agents, direct trapping of insects and finally the careful and timed use of pesticides. The thresholds are most practical tools that allow decision making. The whole concept, utilizing all possible pest control measures in an ecologically sound and for the farmer economically viable programme, is called INTEGRATED PEST MANAGEMENT (IPM).

IPM, through its complexity of problem solving, will be more difficult to apply on farms than simple chemical control techniques. An understanding of not only the biology and ecology of the injury causing agent is required, but also of all the possible effects of the various control measures on the particular farming system of the farmers involved.

The course is of a general nature, strongly emphasizing IPM related techniques. The programme comprises lectures, exercises, case studies, field and laboratory practicals, demonstrations, workshops, contributions by participants, field visits and excursions.

The curriculum of the course is organized in discipline (entomology, nematology, phytopathology/bacteriology, virology and weed science) oriented subjects and interdisciplinary clusters along the following lines:

1. **Introduction to plant production and protection:** basic processes of crop growth; mechanisms of injury; relation between injury, damage and loss; general control methods; social economic context of plant protection.
2. **In the disciplines bacteriology, entomology, mycology, nematology, virology and weed science:** main characteristics of various types of pests and the ways these pests inflict injuries upon plants and cause damage to individual plants and the crop; procedures of diagnosis of pests responsible for crop injury; identification of the cause of crop injury; biology of pest development; control methods, especially those specific to the particular discipline, including IPM approaches of control.
3. **Development of IPM:** history and basic concepts of IPM; surveillance and monitoring; evaluation of pest infestation; sampling techniques; epidemiology/population dynamics; forecasting; crop loss assessment; demonstration of simple types of experimental design and their application; data analysis; development of thresholds.
4. **Pesticide management:** place of pesticides in plant protection and in IPM; establishment of the need to use pesticides; choice of the appropriate pesticides (chemistry, mode of action, dosage, formulation, side effects, selectivity, phytotoxicity, toxicology); pesticide legislation and registration; public health aspects; integration of pesticide use with biological control; environmental fate of pesticides; safe handling and storage of pesticides; pesticide application (application method in relation to the target, operation and maintenance of application equipment).
5. **Research, extension and training in plant protection with emphasis on IPM:** constraints; multidisciplinary approach in plant protection; appreciation of socio-economic importance of pests; IPM concepts in the working situation; stimulation of research and training oriented towards IPM; appreciation and evaluation of traditional plant protection activities; role of extension in plant protection and IPM; conditions for successful implementation of IPM programmes at farmer's level; contributions by participants.

2. INTRODUCTION

For the assessment of the effects of exploitation on the natural fish stocks, fisheries biologists and managers rely on two sources of information: data on catch and effort collected at the landing sites, and data on size and structure of fish stocks collected during research vessel trips. Catch and effort data form the basis for planning, developing and managing fisheries, but they are usually incomplete or considered less reliable. Improvements are required in the actual recording of catches, in the enumeration of fishing boats and gear, in the organization of data storage, processing and analysis, and finally in the presentation of these data to decision makers.

OBJECTIVES

The International Course on Data Handling for Tropical Fisheries Management aims at extending the knowledge of participants about data collection at landing sites, enabling them to estimate magnitudes of catch and fishing effort and showing them how the information can best be analysed and channelled through fisheries administration.

COURSE PROGRAMME

The programme is fully oriented towards developing countries and covers the following major subjects:

Introduction: structure of the course, procedures.

Computers and databases: use of personal computer, including different types of software (database, spreadsheet, word processor, statistical programmes, etcetera).

Literature: search of relevant literature references in databases, journals, etcetera.

Spatial and temporal patterns in the fishery: thematic mapping of fishery related information, including that obtained by remote sensing, temporal variation in catches.

Catchability and gear selectivity: determination of gear selectivity and catchability characteristics and their application.

Sampling and analysis of catch/effort data: various sampling techniques, strategies for catch/effort data collection, application of production models.

Sampling for length frequency and biological parameters: sampling techniques and strategies for length frequency data collection, introduction to length-based stock assessment methods, analysis of biological data.

Sampling for socio-economic information: importance of collecting socio-economic information, design of questionnaires.

Data handling: organization and management of catch/effort data recording systems, information flow, presentation of participants' own data by means of posters.

COURSE METHODS

Various methods of training will be used. The course comprises lectures in fisheries statistics in situations of limited manpower, practical and technical training in the specific use of personal computers for standardized storage, analysis and presentation of data including exercises via prepared case studies.

The data will not only include catch/effort components, but also necessary complementary biological data (length frequency distribution, sex ratio, condition factors) which could fairly easily be obtained at the landing sites.

Special attention will be given to the review of how to collect, use and present catch/effort data in the most economic way for fisheries management. For this purpose participants will be asked to introduce relevant subjects pertaining to their own situation, as part of a systematic exchange of experience.

3.

Rationale

Biological control of insect and other arthropod pests can be successful in any crop in both temperate and tropical regions. The following developments have taken place in research and development of biological control programmes :

- from 'trial and error' introduction to pre-introduction evaluation of the effectiveness of candidate natural enemies ;
- increasing knowledge on population dynamics of host-parasite / predator-prey / pathogen-host interactions and the searching behaviour of natural enemies (e.g. the role of kairomones and learning in host-finding) ;
- role of plants in three-trophic level interactions :
 - effect of crop plant species and variety on effectiveness of biocontrol ;
 - augmentation of natural enemies by habitat management and multiple cropping ;
- mass production of natural enemies on non-hosts and artificial media for inundative release technique.

**Fellowships**

A limited number of grants covering the course fee, the accommodation costs and travel expenses might be available for participants from selected countries.

Potential participants may apply also for grants by one of the following international fellowship granting organizations : UN agencies such as FAO, UNDP, UNESCO ; the European Community (European Development Fund) the World Bank ; or other multilateral and bilateral donors. Candidates applying for a fellowship should bear in mind that official procedures require several months.

It is therefore advisable to make a request for a fellowship as early as possible.

Objectives

After following this course the participant is able :

- 1 to define the different types of biological control of insect pests and to evaluate their suitability considering the type of insect pest(s), crop, environmental conditions ;
- 2 to identify the potential use of biocontrol agents* in his/her working situation considering durability, economical aspects, educational level of farmers, research and extension infrastructure, access to information ;
- 3 to recognize various types of biocontrol agents and diseased or parasitized insects ;
- 4 to contact specialists/organizations for the identification of biocontrol agents ;
- 5 to collect relevant data on biology of pests and their complex of biocontrol agents and other population density influencing mechanisms ;
- 6 to design a pre-introductory study to assess the potential use of biocontrol agents, and to execute experiments on rate of population increase, synchronization, climatic adaptation etc. ;
- 7 to outline a biocontrol programme for a well defined pest problem in a given farming system ;
- 8 to describe a (mass) rearing programme and its requirements ;
- 9 to identify the constraints (technical, financial, educational, social, institutional and political) and needs for the implementation of biological control ;
- 10 to evaluate the implementation of a control programme and adjust the programme accordingly ;
- 11 to make recommendations to optimise the integration of biological control with other control methods in plant protection programmes oriented towards Integrated Pest Management.



DURATION: 17 MONTHS (ADVANCED COURSE 1 MONTHS, RESEARCH METHODOLOGY 1 MONTHS, RESEARCH AND THESIS 1 MONTHS); **REQUIREMENTS:** A FIRST DEGREE (BSC) OR EQUIVALENT PLUS FLUENCY IN ENGLISH. WORKING EXPERIENCE IS DESIRABLE. **ADMISSION:** BASED ON ENTRANCE EXAMINATION. **TUITION FEES:** 1000 DUTCH GUILDERS PER YEAR. **RECURSION FEES:** 1500 DUTCH GUILDERS PER YEAR. **ADDITIONAL COSTS:** CA. 1100 DUTCH GUILDERS PER MONTH. **START PROGRAMMES:** SEPTEMBER 1992. **APPLICATION:** BEFORE 1 JANUARY 1992.

Agricultural University Wageningen

THESIS ORIENTED MSc PROGRAMMES

AGRICULTURAL ENGINEERING

the principles of design, selection and management of agricultural machinery and systems, suited to local resources and socio-economic and environmental conditions

ANIMAL SCIENCE and AQUACULTURE

specializations: Animal Science, Aquaculture

BIOTECHNOLOGY

specializations: Agrofood and Bioprocess Technology, Plant and Microbial Production

CROP SCIENCE

specializations: Crop Breeding, Crop Production, Crop Protection

ECOLOGICAL AGRICULTURE

establishment and development of sustainable agricultural systems

GEOGRAPHIC INFORMATION SYSTEMS

for rural applications

MANAGEMENT of AGRICULTURAL KNOWLEDGE SYSTEMS

integration of the production, transfer and utilization of knowledge in the context of rural development, agricultural extension and education

SOIL and WATER

specializations: Soil, Water

TROPICAL FORESTRY

forest ecology, social forestry and silviculture in tropical regions

SOME INFORMATION ON THE INTERNATIONAL AGRICULTURAL CENTRE (IAC)

The IAC, established in 1951, is a foundation of the Ministry of Agriculture, Nature Management and Fisheries. It provides advisory and training services in the framework of the Dutch programme of development cooperation.

Advisory services

IAC's advisory services are geared towards enhancing the quality of development efforts in agriculture and fisheries. Clients of its services are the development cooperation agencies of the Netherlands and other bilateral and multilateral organizations. These services include:

- a. assessing proposals for development projects and programmes and advising on their feasibility and likely impact;
- b. organizing and leading various types of project missions; and
- c. providing a request and recruitment service for experts in international agricultural development.

Training services

IAC's training services comprise a wide range of activities aimed at the dissemination of knowledge and skills relevant to agriculture and rural development. Training activities include:

- a. a series of annual international courses at post-graduate level in agricultural subjects mainly for persons from non-industrialized countries;
- b. contact training organized on request for various clients: project organizations, government departments and private agencies. Such courses are tailored to their specific needs as to contents, level and duration;
- c. programmes of study on an individual basis for agricultural researchers from abroad;
- d. seminars and congresses, which are held in IAC's fully equipped conference centre; and
- e. training and training support abroad as part of IAC's network of partner institutions.

IAC's programme of regular international courses is as follows:

COURSE	PERIOD	DURATION	CLOSING DATE FOR APPLICATION
Diseases Handling for Tropical Fisheries Management	January-February	6 weeks	October 1
Food Science and Nutrition	January-June	5 months	September 15
Applied Plant Breeding	March-June	3½ months	December 1
Food Production, Storage and Seed Technology	April-July	3 months	January 10
Plant Protection	April-July	3½ months	January 15
Seed Production and Seed Technology	April-July	3 months	January 20
Greenhouse Crop Production	May-June	4 weeks	February 15
Plants de Pommes de Terre	June	3 weeks	March 1
Rural Extension	June-July	1 month	March 20
Associated courses:			
• Training for Trainers	July	2 weeks	
• Extension Management	July	2 weeks	
• Research-Extension Linkages	July	2 weeks	
Food Processing	August-November	3 months	May 15
Vegetable Production	August-November	1 month	April 23
Fertilizer Use and Extension	August-October	1 month	June 1
Dairy Farming in Rural Development	August-November	2 months	May 1
Design of Community Forestry	September-December	3 months	June 10
Food and Nutrition Programme Management	October-November	6 weeks	August 1

The courses are given in the English language, with the exception of the Course on Rural Extension which is given in English and French, and the course Plants de Pommes de Terre which is given in French.

General information

In addition to the International Agricultural Centre there are two other institutes that offer agricultural courses of relevance to personnel from tropical and sub-tropical regions:

- Larenstein International Agricultural College, P.O. Box 7, 7400 AA, Deventer
Tropical Animal Production, Farm Mechanization, Rural Extension and Teaching, Women, Extension Workers and Agriculture (6-10 months)
- Barneveld College (International Training Centre on Animal Husbandry and Milking Technology), P.O. Box 64, 3770 AB, Barneveld
Poultry Husbandry, Pig Husbandry, Animal Feed Production, all four courses (6-9 months)
- Agricultural University, P.O. Box 453, 6700 AL, Wageningen
M.Sc. Courses in: Soil Science and Water Management; Management of Agricultural Knowledge Systems; Animal Production/Aquaculture; Tropical Forestry; Crop Sciences (ecology, protection, breeding) (2 years); Dairy Farming Centre Friesland, P.O. Box 85, 9052 ZJ, Oerleken
Dairy Husbandry and Milk Processing (6 months); Modern Dairy Farm Management (6 weeks)
- International Institute for Land Reclamation and Improvement (I.L.R.), P.O. Box 45, 6700 AA, Wageningen
Land Drainage (3 months)

ADDRESS

International Agricultural Centre (IAC)
P.O. Box 88
6700 AB Wageningen
The Netherlands
Lawickse Allee 11
Telegrams: INTAS
Telephone: (0)8370-90111
Telex: 45888-INTAS NL
Teletax: (0)8370-18552

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INSTITUTE FOR HOUSING STUDIES



The Institute for Housing Studies (IHS), is an independent foundation, based in Rotterdam, The Netherlands. For more than 30 years it has offered training and research programmes in the areas of Housing, Planning and Building, focussing on housing and urban development approaches relevant to low-income people in developing countries.

6 August - 18 December 1992

Workshop: Urban Development - Finance, Economics and Planning

The workshop deals with financial and institutional development aspects of urban development programmes planned and implemented by governmental agencies. It focusses on local government programmes, especially those planned to expand the coverage and improve the quality of municipal services. The workshop is designed for participants working either on sector programmes (e.g. housing, water and sanitation, transportation) or on multi-sectoral programming by local authorities or central agencies. Financial planning and evaluation are both covered, but the main emphasis is on evaluation. Financial evaluation is approached in the context of wider policy objectives. Although the main emphasis is financial, the institutional framework and development necessary to support integration between planning and finance will also be examined as critical elements.

Participants do not need to be expert financial analysts; the workshop is designed to accommodate both experts and planners with other backgrounds who wish to improve their understanding and capacity to deal effectively with the financial aspects of urban development programmes.

Workshop: Environment and Basic Infrastructure

Environmental issues have become a major concern of governments in many countries. Apart from the issues and problems at a global and national level, there are many issues that relate to local urban living conditions, particularly of the urban poor. This workshop introduces issues of urban environmental problems and identifies ways to improve the urban environment by mobilizing and managing resources related to the provision of basic infrastructure and services to low-income settlements. The workshop encompasses issues of national, sectoral and local policies, legislation, and the role of public and private agencies that determine environmental planning of low-income settlements. Particular emphasis will be given to the role of planning, provision, operation, maintenance and performance monitoring and evaluation of basic infrastructure and services as a local means of controlling and improving the urban environment.

**INSTITUTE
FOR
HOUSING
STUDIES**

P.O. Box 1935
3000 BX Rotterdam
Telephone 010 - 4021540
Telex 24548 ihs nl
Telefax 010 - 4045671

Workshop: Urban Management

The workshop has the objectives of increasing participants awareness of key issues of urban management; developing familiarity with important management tools and through this to encourage more realistic settlement planning and implementation.

Settlement planning, especially in the form of traditional land use planning, has often proved an ineffective instrument for guiding the rapid development of cities. This is because in many cases it has become isolated from the main decision making processes which decide what where and when development takes place. More effective planning requires a better understanding of the means available to guide and control city development - how these can be managed and how planning should relate to the whole urban management process.

The perspective is from the town or city government level, and involves study of the potential for resource mobilization through organizations, management approach, land and financial management. The role that local government should play is examined in relation to the community on the one hand and central government on the other. Throughout the workshop the role of effective communications is stressed.



In addition to the regular five-month course programmes, opportunities are offered to invited former participants to participate in a special five month programme which concentrates upon research and project or programme design. The programme is open only to graduates of the regular course programme and practitioners currently engaged in housing or urban development who have been invited to apply by IHS.

The tuition fee for the course programme is 14,000 guilders, payable in Dutch currency to IHS before the commencement of the course programme. The fee covers all tuition costs and excursions. It does not include travel costs between Rotterdam and the participant's home country, nor does it cover accommodation and living expenses in Rotterdam, medical care and books, which together are estimated to amount to approximately 2,000 guilders per month. Most candidates will probably require financial assistance. IHS cannot award scholarships nor pay for travel and living expenses. Applicants should ensure that, if required, a fellowship is requested through the proper channels from an appropriate aid-giving agency. Several bilateral and multilateral agencies are prepared to provide fellowships to eligible candidates, subject to budgetary limitations. They include:

- The European Economic Community (EEC); candidates from countries associated with the EEC through the Lomé Convention, may apply for a fellowship through their national government to the EEC Resident Representative in their own country.
- The Fellowships Programme of the Netherlands Government; application forms can be obtained from the Netherlands Diplomatic Representative in the applicant's home country, and should be submitted to the Fellowships Programme through the national governments.
- The United Nations; details of fellowships and procedures to be followed are obtainable from the Resident Representative, UN Development Programme in the applicant's home country.
- In addition, international financing agencies, such as World Bank, may award fellowships to local personnel involved in their project activities.

Requests for fellowships should be made to the appropriate agencies at the same time that applications for admission are submitted to IHS, so as to ensure that financial and further procedural matters will be settled in time.

Application forms for admission are available from IHS or from the Netherlands Diplomatic Representative.

Applications for the 59th course programme should be with IHS by 1 September 1991. For the 60th course programme by 15 March 1992.

Basic Data on International Courses '92-'93

Offered
in the
Netherlands

For participants from all
over the world

published by Nuffic - Netherlands organisation
for international cooperation
in higher education

postal address Nuffic
P.O. Box 90734
2509 LS The Hague
The Netherlands

Phone 070-3 510 510
Telex 33565 nuffic nl
Cables NUFFIC - The Hague
Fax 070-3 510 513

1. Institutes offering international courses

Science and Technology

International Institute for Aerospace Survey and Earth Sciences (ITC)
International Institute for Hydraulic and Environmental Engineering (IHE)
International Institute for Hydraulic and Environmental Engineering (IHE) and Wageningen
Agricultural University
International Institute for Hydraulic and Environmental Engineering (IHE) and Delft University of
Technology
International Institute for Hydraulic and Environmental Engineering (IHE), D/WA, Bonn, F.R.
Germany and ILRI, Wageningen
Netherlands International Telecommunication Training Cooperation (NITTC)
Eindhoven University of Technology
University of Twente

Agricultural Sciences

Wageningen Agricultural University
International Agricultural Centre (IAC)
International Centre for Development Oriented Research in Agriculture (ICRA)
International Institute for Land Reclamation and Improvement (ILRI)
Dairy Training Centre Friesland
Larenstein International Agricultural College, Deventer (LIAC)
Barneveld College, International Training Centre on Animal Husbandry and Milling Technology
International Soil Reference and Information Centre (ISRIC)
Centraal Bureau voor de Statistiek

**Barnesveld College, International Training Centre
on Animal Husbandry and Milling Technology**
Westerveldweg 12
P.O. Box 64
3770 AB Barnesveld
Tel. 01420-14891

Centraal Bureau voor Schimmecultures
Oudestraat 1
P.O. Box 273
3740 AG Baarn
Tel. 02154-81211

Dairy Training Centre, Friesland
Sijnsreed 4
P.O. Box 85
9802 ZJ Oenkerk
Tel. 05103-1562

Eindhoven University of Technology
P.O. Box 513
5600 MB Eindhoven
Tel. (040) 474600

**International Soil Reference and Information
Centre (ISRIC)**
Duivendaal 9
P.O. Box 353
6700 AJ Wageningen
Tel. 08370-19063

**Larenstein International Agricultural College,
Deventer (LIAC)**
Brinkgreverweg 69
P.O. Box 7
7400 AA Deventer
Tel. 05700-84600

International Agricultural Centre (IAC)
Lawickse Allee 11
P.O. Box 88
6700 AB Wageningen
Tel. 08370-90111

**International Centre for Development Oriented
Research in Agriculture (ICRA)**
Lawickse Allee 11
P.O. Box 88
6700 AB Wageningen
Tel. 08370-22938

**International Institute for Aerospace Survey
and Earth Sciences (ITC)**
350 Boulevard 1945
P.O. Box 6
7500 AA Enschede
Tel. 053-874444

**International Institute for Hydraulic and
Environmental Engineering (IHE)**
Oude Delft 95
P.O. Box 3015
2601 DA Delft
Tel. 015-783648

**International Institute for Land Reclamation
and Improvement (ILRI)**
Markteweg 11
P.O. Box 45
6700 AA Wageningen
Tel. 08370-74200

University of Twente
Drienerloaan 5
P.O. Box 217
7500 AE Enschede
Tel. 053-893539

Wageningen Agricultural University
Hoerenstraat 23-25
P.O. Box 433
6700 AL Wageningen
Tel. 08370-82600



2. Scholarships and fellowships for study and training in the Netherlands

Government scholarships and fellowships

NFP: Netherlands Fellowships Programme of Development Co-operation (nationals from developing countries only)

A Regular Programme
Within the framework of this programme, the Dutch government grants fellowships to nationals from a great number of developing countries.

The fellowships can be used for many of the countries mentioned in this booklet. Look in the course description under the heading 'scholarships', whether 'NFP' is mentioned or not.

Candidates for a fellowship must be nominated by their employer, and formal employment should be continued during the fellowship period. As a rule the candidate's government is required to state its formal support, except in the case of certain development-oriented non-government organisations (NGO's). Candidates must have the education and working experience required for the course, as well as an adequate command of the language in which it is conducted (usually English, sometimes French). The age limit is 40 for men and 45 for women. It is intended that candidates, upon completion of training, return to their home countries and resume their jobs. When several candidates with comparable qualifications apply, priority will be given to women.

A Dutch government fellowship is granted for the duration of the course in question. Fellowships cover normal living expenses, fees, and health insurance. They cover travel expenses only when the course lasts 3 months or longer.

For information on the eligibility of your country for these fellowships and on the application procedure, please contact the nearest Netherlands Embassy. Information on the courses for which the

fellowships are available can be found in this booklet. The institute for international education concerned can provide more information, and it will handle the granting of the fellowships.

B Tailor-made Training Programmes in the Netherlands

In addition to the regular courses offered by the institutes for International Education, there are some possibilities for arranging and funding ad hoc, tailor-made programmes for nationals of developing countries. These can be organised either for individuals or for groups.

On the basis of the capacities and needs of candidates and their sponsoring organisations, proposals for such programmes are considered in terms of feasibility, cost and level of priority. A tailor-made programme could involve temporary placement within a company, a government agency, a university, an institute of International Education or other educational institution or any other worthwhile activity.

As a rule, the training should be of brief duration (less than 12 months). Tailor-made programmes are not intended for training associated with commercial transactions, nor for research or the pursuit of regular higher education. Nor are they intended for preparation for regular study.

The conditions and procedures for application that apply to fellowships for the regular programme also apply to fellowships for tailor-made programmes. For information please contact the nearest Netherlands Embassy.

Netherlands Organisation for International Cooperation in Higher Education (Nuffic)

The Dutch government also grants a number of scholarships to foreign students through Nuffic within the framework of cultural agreements between the Netherlands and other countries.

These scholarships have the following in common:

They are available to university graduates holding a post graduate degree, university students holding a bachelor's degree or its equivalent, to graduates of an academy of art or a music conservatory and to scientists.

The amount awarded is Dfl. 1,130 per month. In principle, scholarships are awarded for a maximum of one academic year.

They must be used for study at a university, academy of art, music conservatory, or institute of higher education in the Netherlands. Under certain conditions they can also be used for participation in courses offered by the institutes for International Education (i) in the Netherlands. In this case, scholarships are granted for a maximum of 9 or 10 months, regardless of the duration of the course concerned. Only in very few cases are tuition fees and fieldtrips covered by the grant. All other expenses incurred in connection with an II course must be paid by the scholarship holder. (Information about costs is included within each course description.)

Applications for these scholarships should be submitted to the relevant authorities in one's home country (please note deadline for submission).

Some cultural agreements have restrictions regarding the field of study.

Please note that foreign students must be nominated officially by their own governments to the Netherlands embassy, and that no financial support can be given to students applying directly to Nuffic.

Information on how and where to apply for these scholarships is available at the nearest Netherlands embassy.

Fellowships offered by other (international) organisations

In recent years many other (international) organisations offered fellowships to enable people to attend one of the courses mentioned in this booklet. These include:

- Asian Development Bank
- European Communities (non EDF)
- Food and Agriculture Organisation of the United Nations (FAO)
- International Atomic Energy Agency (IAEA)
- International Civil Aviation Organisation (ICAO)
- International Labour Organisation (ILO)
- International Maritime Organisation (IMO)
- International Telecommunication Union (ITU)
- Organisation for Economic Cooperation and Development (OECD)
- Organisation of American States (OAS), for OAS member states only
- United Nations Centre for Human Settlements (UNCHS)
- United Nations Development Programme (UNDP)
- United Nations Educational, Scientific and Cultural Organisation (UNESCO)
- United Nations Industrial Development Organisation (UNIDO)
- World Bank (WB)
- World Health Organisation (WHO)
- World Meteorological Organisation (WMO)
- World University Service (WUS)

For information on their requirements, apply to the project authorities, the organisation's representative in your country or to their regional headquarters. In case you are working in an organisation which is supported by a foreign donor organisation, it might well be possible that there is a training component in the aid given to your organisation. Check whether you are eligible to receive financial support for your proposed training.

More and detailed information on fellowships

For more and detailed information on possibilities for scholarships and fellowships you can consult the following books:

- *Study Abroad XXVI*, 1989, 1990, 1991, a UNESCO publication, Paris.
- *Grants Register 1989 - 1991*, C.A. Lerner (editor), London, MacMillan.
- *Fellowships Guide for Western Europe*, published by the Council for European Studies of Columbia University, New York, NY 10027.
- *Bourses et subventions*, a publication in French of the University Press of Louvain, Belgium.
- *Grants and Fellowships in International Studies*, A. Hardy (editor), published by the International Studies Association of the University of Pittsburgh, PA 15260.
- *Grants for Graduate Study abroad*, published by the Institute of International Education, New York 10017.
- *CISP International Studies Funding Book* (1979), published by the Council on Intercultural Studies and Programs, New York 10017.
- *Awards for Commonwealth University Academics* 1990 - 1992, London, Association of Commonwealth Universities.

DEVELOPMENT
AND PROJECT
PLANNING
CENTRE



UNIVERSITY OF BRADFORD



**Environmental Impact Assessment
and Project Appraisal in
Developing Countries**
27 January - 21 February 1992

**FOUR WEEK INTENSIVE
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Development and
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Bradford
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Introduction

Environmental degradation is a matter of central concern for the whole international community. For the developing countries, it is now recognised that sound environmental management far from being a luxury - is an essential requirement for achieving continued and sustainable economic development.

The need for rapid economic development and increased living standards in the developing world is now more acute than ever before. Often, however, the process of economic growth threatens the natural resource base on which continued development ultimately depends. The challenge, therefore, is to achieve sustainable development, where the goal of increased wealth and well-being is reconciled with the need to maintain the economy's productive resource base.

Consideration of the potential environmental effects of development policy and investment decisions is now stan-

dard practice in most development institutions and lending bodies, and various procedures have been developed to encourage optimal resource use and to minimise the adverse environmental effects. The application of Environmental Impact Assessment (EIA) procedures can assist in ensuring that the environmental consequences of individual programmes and projects are identified at an early stage, and can be used to supplement the traditional cost-benefit analysis of projects by a rigorous appraisal of environmental effects.

Course Objectives

The course aims to provide participants with a broad understanding of environmental issues in developing countries, and to develop a practical knowledge of the procedures for assessing the environmental impact of development policies, programmes and projects.

This course will be structured on the following themes:

- **Development and the Environment**
Concept of sustainable development and environmental management. Reconciling economic development, control of pollution, and maintenance of the natural resource base. The benefits and costs of environmental protection. Introduction to project appraisal methods and cost-benefit analysis.
- **Sectoral Aspects of Environmental Impact Assessment**
Environmental processes and economic sector profiles. Consideration of environmental pressures at the sectoral level (agriculture, industry, transport, mining, tourism, water supply). Sectoral assessment of environmental impacts. Waste treatment and control processes.

- **Environmental Impact Assessment Techniques and Project Appraisal**
Environmental impact assessment (EIA) procedures and methods. Case studies and group exercises in EIA. The valuation of environmental costs and benefits and their inclusion in project appraisal - cost-benefit analysis.
- **Environmental Impact Assessment Implementation and Policy**
Processes for reporting environmental assessments. Procedures for EIA used by international and bilateral development organisations. Environmental assessment at the programme level. Economic policy and environmental management. Legal and regulatory environmental policy.

Course Participants

The course is intended for persons involved with development projects and policy formulation, who wish to ensure that environmental considerations are evaluated in a systematic manner and incorporated into the decision-making process. The course will benefit government administrators, project planners and managers, staff of international development institutions, and members of aid agencies and non-governmental organisations, who wish to obtain a better understanding of the role of EIA and environmental management in the development process. Participants need not have had previous experience of EIA.

Imperial College
of Science, Technology and Medicine
 UNIVERSITY OF LONDON

Centre for Environmental Technology

**Postgraduate
 courses and research 1991-92**

Postgraduate course Environmental Technology

The UK Natural Environment Research Council, Economic and Social Research Council and Science and Engineering Research Council have at present (September 1991) accepted this course for the tenure of their Advanced Course Studentships. Allocations will not necessarily remain unchanged for 1991-92. A limited number of Ford Foundation scholarships for the course are available for Bangladeshi nationals.

The postgraduate course in Environmental Technology is designed to build the need for well-qualified graduates in the environmental management areas of industry, and in local and national government both in the United Kingdom and overseas. It is formed by a series of different lecture units given by departments throughout the College so as to sustain the necessary interdisciplinary treatment of the subject. The course aims to introduce students to actual and potential environmental conflicts and to generate the confidence necessary to analyse, assess and resolve these issues.

The course is full-time for one calendar year and is recognised for the award of the MSc degree and the DIC. A major feature of the course is the flexibility it affords students in following their own special interests. The course is divided into three parts. The core course, given in the first term is compulsory for all students and covers the following subjects: introduction to environmental technology, the physical environment, principles of applied ecology, primary mineral production, energy, urban technology, resource economics, environmental policy and law, operations research and environmental modelling, microcomputing, and sources and choices of technology. During the second term students are able to select one of a range of specialist options for further study, and the third term extending until September is devoted to a research project stemming from the specialist option. The specialist options and the project are designed to cater for a variety of individual interests and future professional needs.

Not all the specialist options listed will necessarily be offered; it will depend on demand. The emphasis of teaching within a particular option may also change.

Prospective candidates should possess a good Honours degree in science or engineering or qualifications that are at least comparable.

Core Course

Convener: Mr R.B. Macrory

The core course is arranged so as to present a progressively more complicated and sophisticated understanding of the human environment. First the hazards of the physical world, the organisation of the natural environment, its raw materials and biological constraints are considered. The focus then shifts to the introduction of man and the organisation of a civilised society. The final sections deal with the problems of allocating resources, the elements of choice in managing the environment and techniques of decision making.

Specialist Options

One specialist option may be selected from the following range:

Ecological management option

Co-conveners: Dr J.R. Beddington, Dr A.J. Menon

This is designed to provide training in the ecological and economic management of animal and plant environments. Emphasis is placed on the problems of decision making as it affects conservation and rural land use, fishery, game and forestry management, control of infectious diseases, pests and environmental pollution. A quantitative approach is adopted and training is given in the use of operations research techniques, mathematical and computer models, where appropriate to management problems in this field.

Water management option**Convener:** Dr J.H. Loefer

This option seeks to define many of the important aspects of the water cycle with respect to the need to manage and control water resources

Pollution option**Convener:** Dr M.R. Ashmore

This option is designed to provide a balanced view of a very broad spectrum of pollution situations, comprising sources, effects, control techniques, economic and social implications, control policy and legislation

Energy policy option**Convener:** Mr R. Tomkins

This option is designed to present the economic, technical and organisational factors affecting the planning of energy supply and use. Economic analysis is used as a framework within which to study current energy problems. At the end of this course graduates will have a sound grasp of the economics of energy, the technical and political constraints on future patterns of supply and demand and the planning methods used in this sector.

Considerable emphasis is put on short projects as a means of integrating the many technical and economic factors relevant to energy planning, and to assist in integrating the lecture material with a study of current energy problems. Most of the projects involve group working when students with different academic and work backgrounds can collaborate in studying particular problems by bringing their different experiences and skills to the group. The findings of the project are presented to the class and outside visitors will often be invited to attend and comment.

Computer methods are introduced into many aspects of the option. Computer applications are used to familiarise students with the planning and computational methods used in computers and government agencies as an aid to solving energy problems and to appraising energy projects.

The planning methods and problems studied are relevant to all countries. However particular attention is paid to the application of these methods to developing countries.

Radioactivity in the environment option**Convener:** Mrs M.J. Minski, Dr G. Shaw

This option seeks to identify the sources of radiation in the environment, examine their impact on the environment, quantify the radiation doses to man by following the various pathways by which radiation enters man. It also looks at the measures available to limit radiation in the environment both practically and via legislation.

Research Project

The individual research project occupies approximately five months of the course. It offers the student the opportunity to study a narrower area in some depth and to encounter perhaps for the first time, the practical problems of implementing the knowledge acquired.

Projects may be theoretical or practical. Many are done in collaboration with industry and government. Considerable freedom is allowed in project selection. The project is supervised by at least one member of the College staff.

Research

The MSc course teaching is founded on the research interests of the staff, most of this research being departmentally based. However, the Centre has its own research programmes on environmental policy, education, law, pollution, environmental geochemistry and marine and renewable resources economics with many workers involved. Additionally, it either houses or participates in the supervision of postgraduate research in the environmental field, particularly where the project is multidisciplinary in nature.

Normal qualifications for acceptance for research work are a first or good second class Honours degree in science or engineering. Research students eligible to apply for registration for the MPhil or PhD degrees are normally required to register for the Diploma of the Imperial College (DIC). Prospective candidates may be required to register in the first instance for the MPhil degree (normally taken after two years research) after one year retrospective transfer to PhD may be allowed. Direct registration for PhD is considered in suitable cases. The PhD degree is normally taken within three years from the start of the research programme, and after three years only in exceptional cases. Attendance of part of the MSc course programme is expected.

Application forms for admission to the postgraduate course and research can be obtained from the Senior Assistant Registrar (Admissions), Imperial College, London SW7 2BZ, and should be completed and returned by 1 May.



LONDON SCHOOL OF HYGIENE & TROPICAL MEDICINE

UNIVERSITY OF LONDON

THE NEW TEACHING PROGRAMME

In September 1990 Cluster 1 will offer MSc courses in Public Health Medicine, Human Nutrition, and Health Planning & Financing, the latter jointly with the London School of Economics & Political Science (LSE). From September 1992 additional courses are planned in Environmental Health, and in Health Policy.

Each MSc course is broadly based. The MSc in Human Nutrition covers clinical, dietary, epidemiological, metabolic and socio-economic aspects of nutrition. Health Planning & Financing covers health economics, social dimensions of health care, epidemiology of health care and basic community health. Public Health Medicine trains doctors who wish to follow careers either in health services or academic departments.

Common to all the MSc courses in Cluster 1 is the focus on health policy formation and evaluation in countries at all levels of development. In addition, all courses encourage the acquisition of practical skills: for instance, quantitative and qualitative methods; computers as tools for planning; and economic evaluation techniques. The courses are taught mainly by staff in the Department of Public Health & Policy.

MSc in Public Health Medicine

Intended for medical doctors who practice public health medicine in service or academic posts in the United Kingdom and for doctors from other industrialized countries concerned with the management of similar problems and issues, this course aims to provide an academic foundation for the understanding and practice of public health medicine. It offers therefore, a training in the promotion of health and prevention of disease; the assessment of the health needs of communities; research methods for evaluating and managing health services; and the investigation and control of environmental threats to health, encompassing communicable disease control. A range of optional study units is available.

MSc in Human Nutrition

This course provides a comprehensive training in human nutrition and integrates nutritional science with its clinical, epidemiological and social applications. Current issues of critical concern in human nutrition, health and food production are addressed, and a wide range of optional study units is available. The course attracts graduates in science, medicine, agriculture and social sciences, from many countries, who wish to equip themselves with the knowledge and practical skills necessary to carry out advanced research and teaching in human nutrition, to

The Mission of the London School of Hygiene & Tropical Medicine is to develop its role as Britain's national school of public health;

to be Europe's leading institution for research and postgraduate education in public health; and

to enhance its position as a premier international centre of excellence in tropical medicine and public health.

undertake policy and programme planning and administration in nutrition, and to work in public health and health education.

MSc in Health Planning & Financing

The MSc in Health Planning & Financing is a joint programme between the Department of Public Health & Policy, LSHTM and the Department of Social Science & Administration, LSE, drawing on the expertise of both Schools. It provides a rigorous training to those contemplating, or already pursuing, a health planning, management, academic or research career in countries at all levels of development. The course aims to develop expertise and competence in health policy, planning, management and financing. Considerable choice of subjects is available: the main courses include health planning and financing, health economics, epidemiology, health services research and social dimensions of health. All the continents of the world have been represented in the student body, and in any one year participants come from twenty to twenty-five countries.

MSc in Environmental Health*

This course will concentrate on the application of environmental epidemiology to environmental assessment and its relationship to health policy and planning.

MSc in Health Policy*

This course will concentrate on the evolution and formation of health policies and the evaluation of priorities and health programmes within their social, economic and political context.

*New courses planned for September 1992

The courses in this Cluster provide training in a variety of aspects of public health, epidemiology and related subjects including statistics and demography, suitable for people who work in either developing or developed countries. The MSc courses in Community Health in Developing Countries, Epidemiology, Medical Demography and Medical Statistics have in common the basic disciplines of epidemiology and statistics. Each course, however, has its own particular emphasis, ranging from the methodological to the more applied aspects of public health. All courses include optional study units, shared with other MScs, which enables the interests and needs of most students to be met.

Teaching is mainly by staff from the Department of Epidemiology & Population Sciences. The Department has an international reputation for research in epidemiology and environmental health in relation to the health problems of both the developed and developing world.

MSc in Epidemiology

This course provides training for future epidemiological specialists in academic departments, research units, or the health services. The core course deals with the general methods for describing the health of populations, aetiological research, and for providing the information base for planning and evaluating health policies. Optional study units explore epidemiological methods and applications in a range of special fields. These span communicable and non-communicable diseases and applications and methods in developing and developed countries.

MSc in Community Health in Developing Countries

This course provides advanced training in community health, epidemiology, design of disease control programmes, and health policy and planning in developing countries. It offers a rigorous scientific training for those contemplating or already pursuing, an academic, research or senior planning and administrative career. The course attracts every year about thirty experienced health professionals from all parts of the world, and the educational gains from the resulting exchange and interaction are recognized to be invaluable. The course combines a range of taught, participatory and optional material. Subjects include: communicable disease control projects; health care methodology; epidemiology; statistics; the design and analysis of surveys; seminar presentations; and a wide range of optional study units from many disciplines.

MSc in Medical Demography

The MSc in Medical Demography was established with government support to provide a broad introduction to population science applied to problems of health, social welfare and economic development. As well as enabling students to achieve technical competence in the basic techniques of demography, statistics and epidemiology, a high priority is given to studies of the social, cultural and economic determinants and consequences of population change. The course offers a strong foundation for those wishing to embark on a career in either population research or administrative or technical work that requires an understanding of population processes. Optional study units include family planning evaluation, population and development, and advanced demographic methods.

MSc in Medical Statistics

This course gives participants a sound understanding of the main statistical ideas used in medical research and prepares them for work as statisticians in a medical or pharmaceutical environment. Special features of the course include clinical trials, the use of statistics in medical journals, and the epidemiology of both communicable and non-communicable diseases. Other topics covered include probability theory of statistical inference, demography, sample surveys, survival analysis and Bayes' methods. Computing is an important element in this course; most practical sessions involve computing, providing familiarity with the major packages. Some specialization, to suit future career plans, is possible. The course is aimed primarily at those with a good mathematical background.



Mrs Julie Thompson
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London School of Hygiene & Tropical Medicine
Keppel Street
London
WC1E 7HT
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Telex: 8953474
Fax: 071 323 0630

MASTER'S DEGREE (MA Econ) IN ECONOMICS AND MANAGEMENT OF RURAL DEVELOPMENT



57

EUROPE

University of Manchester



Programme Objectives

This new programme aims to satisfy a widely perceived need for policy-makers, planners and managers in rural development, many of whom have scientific or technical backgrounds, to acquire professional training and skills in economics and management. An unusual and valuable feature of the programme is its interdisciplinary integration of the study of agricultural economics with that of the institutional and social basis of effective planning and management. Teaching and learning employ an appropriate combination of methods dealing with theoretical approaches and models, their applications and evaluation in practice, and case studies and simulations.

Participants

The programme is intended primarily for those involved in policy-making, planning or managing activities in rural areas of the Third World. This includes government officials (in ministries of Agriculture and Rural Development and related ministries), employees of parastatal organisations, the staff of bilateral and multilateral development agencies and those working for non-governmental organisations.

Structure of the MA Degree

Students must complete four (half unit) core courses, and four (half unit) optional courses. Exceptionally, candidates may be allowed to substitute for one or two core courses. Optional courses are subject to availability each year. Normally more options will be available than those given in the indicative list below.

Core Courses

1. Economics of Rural Development
2. Agrarian Systems and Change
3. Appraisal and Evaluation of Rural Projects
4. Planning and Managing Rural Development

Optional Courses

5. Population, Nutrition and Rural Development
6. Agriculture in Development: Sector and Household Theory
7. Food and Agricultural Policies in LDCs
8. Economics of Technological Change in LDC Agriculture
9. Decentralisation and Participation in Development
10. Managing Environmental Change in Rural Development
11. Information Systems and New Technologies
12. Microcomputers in Administration and Management

For information about the programme please write to:
Programme Secretary:
Joe MacMillan

Institute for Development Policy and Management
University of Manchester
Crossford House, Precinct Centre
Oxford Road
MANCHESTER M13 9QS
United Kingdom

Telephone: 061 275 2800
Telex: 649715 OFFICE G and IDPM
Fax: 061 275 8839

Dissertation

In addition to written assignments and examinations study fellows must also complete a 10,000 word dissertation, on a topic of their choice approved by the Programme Director. Students are encouraged to base their dissertations on topics of direct professional concern to themselves and should bring any necessary materials and documents from their home country with them.

Practical Exercises and Field Visits

In addition to academic studies, participants can pursue non-assessed options on budgeting, financial management and microcomputing, and participate in field work overseas.

Entry Requirements

Applicants will normally be expected to hold the equivalent of a good honours degree in a relevant discipline. Allowance will be made for postgraduate and professional experience in cases where this is deemed appropriate. Students who do not meet the requirements may register for a nine month Diploma in Agricultural Economics or Development Administration and if satisfactory results are obtained, proceed to the Masters in Economics and Management of Rural Development the following year.

Applications and Scholarships

Applicants are normally sponsored by their employer, governments, or aid agencies, including the UN, EEC and World Bank/ADB. Applications from private individuals are also considered. Advice on the availability of British Technical Co-operation training awards can be obtained from British Embassies, High Commissions or British Council Representatives.

Course Organisation

The degree is jointly mounted by the Department of Agricultural Economics and the Institute for Development Policy and Management.

The Department of Agricultural Economics is part of the Faculty of Economic and Social Studies and staff research interests include the economics of agricultural policy, price analysis, economics of agricultural development, natural resource economics, the economics of technical change, production economics, commodity market modelling, and supply and demand analysis.

The Institute for Development Policy and Management is a multi-disciplinary group concerned with helping to develop the competence of individual managers and administrators and strengthening the organisations in which they work. It has a specialist library with more than fifteen thousand volumes and a microcomputer workshop. Staff research interests include project planning and management, integrated rural development, rural institutions, rural credit, land settlement, agricultural extension and irrigation management.

Dates

The programme will normally be run annually from September to September.



Institute for Development Policy and Management

The Institute for Development Policy and Management (IDPM) is a multi-disciplinary group specialising in training, consultancy and research in management and development in the Third World.

The Institute's main concern is to help develop the professional competence of individual managers and policy-makers, and contribute to the strengthening of the organisations in which they work. These aims are pursued through a variety of programmes in the UK and overseas.

Resources

IDPM has thirty-five Manchester-based professional and administrative staff, and numerous associates in Britain and overseas. As an Institute within the University of Manchester, IDPM is able to call on the extensive resources of one of Britain's largest and best universities, with its long established reputation in many fields of development.

The IDPM library has over fifteen thousand separately catalogued texts, with subcatalogues in some one hundred and seventy journals, and serves the needs of many students of development in addition to regular participants in IDPM study programmes. Teaching resources available include micro-computing facilities and audio visual aids, including TV and video.

Programmes in Manchester

The following study programmes are offered annually at IDPM:

Short Courses (12 weeks)

Managerial Studies	(Sept - Dec)
Management of Agricultural and Rural Development	" "
Senior Management	(Jan - March)
Implementation of Rural Projects and Programmes	" "
Training for Trainers	" "
Personnel Management	(April - July)
Development Finance Institutions: Management and Design	" "
Management of Higher Education Institutions	" "
Public Enterprises: Agenda for Action	" "

Graduate Diploma (9 months - Sept - June)

Development Administration
Training and Development for the Public Sector

Masters Degree Programmes (12 months - Sept - Sept)

MSc in Human Resource Development
MA (Econ) in Development Administration and Management
MA (Econ) in Economics and Management of Rural Development
MA in The Management and Implementation of Development Projects

Collaboration Overseas

IDPM offers two field-based Masters programmes in institutional reform, the MA in Institutional Development and the MA in Corporate Development. These are located in-country with collaborating institutions.

As the agents of various governments and organisations, or international agencies, IDPM contributes to institution building and managerial development through a combination of consultants, research and collaboration in the design and conduct of training programmes. Recent work has been undertaken in Egypt, The Gambia, Ghana, Hong Kong, Indonesia, Malawi, Mexico, Nepal, Pakistan, Sierra Leone, Tanzania, Thailand, United Arab Emirates, and Zambia.

UNIVERSITY OF NEWCASTLE UPON TYNE



AND



SUSTAINABLE RURAL DEVELOPMENT

A SHORT COURSE

6 July - 11 September 1992

Short Course Organiser
Faculty Office
Faculty of Agriculture
The University
NEWCASTLE UPON TYNE
NE1 7RU
UK

Course Objectives

The main objective is to provide a new and more effective approach to Sustainable Rural Development which recognises and uses indigenous knowledge and skills.

Specific Aims include:-

- 1 Developing/improving skills needed to communicate with and involve farmers in generating and transferring technology.
- 2 Understanding physical and socio-economic constraints to the production and distribution of agricultural products in a tropical environment.
- 3 Learning and practicing skills in information collection and analysis.
- 4 Reorientation towards a participative approach in a multi-disciplinary environment.

Course Content

This course covers the most important aspects of Sustainable Rural Development for professionals in developing countries.

- 1 *Constraints in tropical agriculture*
Problem definition, Agro-ecosystems, Production constraints & systems
- 2 *Identification of Needs*
Information collection methods, Secondary data sources
Survey methodology, Rapid Rural Appraisal
- 3 *Information Analysis*
Market/budget analysis, Microfarm economics
Farming Systems Analysis, Computer modelling
- 4 *Microcomputer Applications*
Introduction to information technology, Wordprocessing, Spreadsheets, Data Management, Statistical analysis
- 5 *Extension Methodology*
Change and development, Practical communications skills
Managing people, Research and extension, Training methods
- 6 *Monitoring and Evaluation*
Methodology & techniques, Impact evaluation, Pilot studies
- 7 *Development Issues*
The discussion of important issues affecting technology transfer: Aid, food security, environment, appropriate technology, gender issues, green revolution

Options:

The basic course is 10 weeks. Three additional weeks are available and are strongly recommended for participants coming directly from overseas. There is an Induction Module 30 June - 3 July 1992 and a Special Study Module 14 September - 4 October 1992. This two week period at the end of the basic course is designed to meet special individual training needs or research interests

 OVERSEAS
 DEVELOPMENT
 GROUP

 ARID LANDS AND PASTORAL
 DEVELOPMENT

TIME/NG: 1st July to 6th September 1992 (8 weeks).

PLACES: Fifteen.

FEE: £5,190 (bed and breakfast, accommodation included).

LANGUAGE: The course will be conducted both in English and French. All participants should be proficient in one of these two languages, and it is hoped that some may be competent in both.

INTRODUCTION: This course is designed for professionals concerned with the broader environmental, economic, social and political issues associated with livestock and pastoral development. They will be working in national ministries, international agencies, non-government organisations (both international and local) or with pastoral development projects and schemes.

Farmers and herders living in arid and semi-arid regions continue to experience major threats to their food security and basic livelihood, from a combination of factors both physical (eg climate, poor infrastructure) and social (eg conflict over resources, inappropriate policies). All too often they are still regarded as marginal, or even hostile, to the broad processes of national economic and social development. Over the years, many governments, donors and other development agencies have made considerable efforts to alleviate their problems and to promote economic and social development in the arid lands and among pastoral and farming communities. Nevertheless, much remains to be done to establish the preconditions for a stable livelihood in these regions and among these people, so that they may contribute effectively to national goals of food security and sustainable development.

There is a very real need to develop new approaches to the particular problems and potentials of these regions and their farming systems—pastoralism, agro-pastoralism and agriculture. This course will provide the elements of such an approach, which will be interdisciplinary. It will also provide the framework for a better understanding of the ways in which local populations as well as development planners assess and make use of the physical and other resources of their environment.

The course will review and analyse the strengths and weaknesses of different institutions—local, national and international—involved in the management and development of resources in the arid and semi-arid regions. Throughout, focus will be on pastoral systems and their development; at the same time, it will be explicitly recognised that these systems evolve within a wider environmental, economic, social and political context with which they interact and whose dynamics must also be understood if effective policies and programmes are to be established for pastoral development.

The integrative, inter-disciplinary approach and systems analysis adopted in this course will aid in the identification of viable development options and strategies for the different populations and farming systems of the arid regions, and in the formulation of more effective and supportive measures to promote local economic and social development and sustainable resource management, thereby contributing to national security and development.

1992



THEMES OF
THE COURSE

The course will be designed around six main, inter-related themes. These will be approached in sequence, but each thematic module will be complemented by specific sessions focusing on appropriate ways of collecting and analysing relevant data. In addition, both the thematic sessions and the methodological sessions will draw heavily upon case studies and the experience of course participants and course teachers.

1. **The resource base.** The course will start with a consideration of the basic resources of arid lands, the history of resource use, the dynamics and inherent physical and biological problems of sustainable livelihood systems in these areas.
2. **Farming systems and resource exploitation.** This module will explore the major farming systems—pastoralism, agro-pastoralism and agriculture—together with other issues, such as small-scale irrigation, agro-forestry, etc., as systems of resource management as well as economic and social systems. It will examine their internal dynamics and contradictions as well as the relationship between different farming systems within a given physical environment. It will also consider the relationship between the farming systems of the arid lands and the wider national (and international) economy and society.
3. **Policies for arid lands and pastoral development.** The experience of some of the many programmes, schemes and projects for livestock and pastoral development will be considered in this module, using a wide range of case studies and drawing on the experience of the participants and the teachers of the course. Changes in approach to particular issues—eg pastoral associations, environmental degradation, etc.—will be examined, as will the changing circumstances in which policy has been formulated and planning implemented—eg structural adjustment. The main focus will be on lessons learned.
4. **Institutions.** Here, the role of various formal and informal institutions will be analysed, with a view to assessing the strengths and weaknesses of different modes of organisation and intervention in promoting pastoral and agricultural development and sustainable resource management. Government ministries and their regional and local technical services, large and small projects, non-governmental organisation (both local and foreign), and producer/user associations and groupings will all be considered.
5. **Food security.** This issue, which is of central concern both to the local populations of the arid lands and to national and international development agencies, will be explored with reference both to the objectives and strategies of pastoralism, and the considerations that affect food security policies and planning at local, national and international levels.
6. **Potential options for arid lands.** The course will end with a review of experience to date and prospects for the future. A major part of this module will be a workshop to which participants on the course, as well as outside speakers invited for their knowledge and experience of arid lands and pastoral development, will be expected to contribute. It is hoped that the proceedings of the workshop will be published.



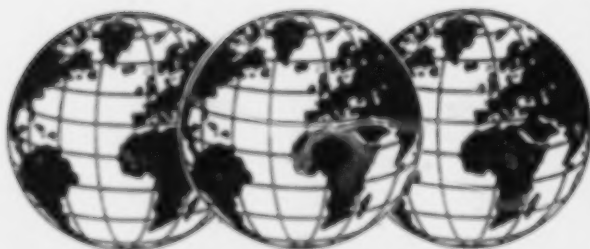
UEA
NORWICH

Overseas Development Group
University of East Anglia, Norwich NR4 7TJ, United Kingdom

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Telex: 975197 UEA CPC G for OIR
CABLE: UEA NOR NORWICH



GRADUATE COURSES ON ENVIRONMENT



ENVIRONMENTAL RESOURCES UNIT

TAUGHT COURSES FOR HIGHER DEGREES

MSc DEGREE

This programme of study combines lectures, group work, tutorials, seminars and research, and leads to the degree of MSc. The programme consists of two components:

- (1) Two terms of intensive study;
- and
- (2) A period of research in which a project is studied, written up as a dissertation and submitted to the University as a formal part of the Course.

The minimum period of study is one year full-time. It is, however, possible to take the degree part-time over a two-year period.

COURSE OPTIONS

The MSc Course provides two Options.

Option 1

Man, Environment and Resources is aimed at candidates who will probably work in Europe, North America, New Zealand or Australia.

Option 2

Environment, Resources and Development is aimed at candidates who expect to work in less industrialised countries, with tropical or sub-tropical climates. This Option has proved very valuable for overseas students.

The Options comprise topics designed to help candidates understand current environmental issues, complexities and linkages. They are presented by staff of the Unit, colleagues from the University and outside contributors.

COURSE STRUCTURE

The topics are described as identifiable study blocks but the Course is integrative in nature. Any one topic may be referred to in more than one of the study areas. One of the main objectives of the programme is to ensure that the different study areas interrelate to provide a comprehensive understanding and overview of major environmental components, problems and solutions.

Every effort is made to provide candidates with flexibility in selecting study topics. It must be understood, however, that timetable constraints may frustrate this working to *their complete satisfaction*.

Environmental Interactions

Natural and man-made factors in the environment are discussed. Special reference is made to pollution in the UK, and environmental degradation in Asia and the Pacific area.

Environmental Assessment

Environmental Assessment is the central theme of the programme and receives frequent mention in tutorials and informal discussion. Environmental Impact Assessment (EIA) as a planning tool, its methods and procedure, and national and international legislation are considered, with case studies from both industrialised and less industrialised countries.

Environmental Degradation and Protection

This study block is closely related to EIA. Case studies of air pollution, noise and environmental protection form its central theme. The role of voluntary organisations in formulating political will to achieve environmental protection is stressed.

Land Use

Rural and urban land use includes soils, climate and topographical and historical aspects. Coastal zones are given special consideration. Land reclamation after industrial use is considered in relation to recreation, education and redevelopment. This study block also includes remote-sensing.

The Marine Environment

The marine environment is considered, using case studies. This study block relates to the coastal zone and estuarine section of the programme.

Agriculture as a Resource

Food production in temperate and tropical climates is covered in considerable detail, together with factors limiting production and methods of solving such problems - for example, through the use of irrigation, fertilisers and improved crop species. Farming systems are studied, including traditional subsistence agriculture and large-scale commercial agriculture, with case studies from West Africa, East Africa and Asia. Consideration is also given to crop improvement and selection in relation to environmental factors, the green revolution, food security and nutrition interventions.

Urbanisation in Developing Countries

Rapid urbanisation is a feature of many developing countries; this unit of the Course examines its causes and consequences. It includes the study of alternative theoretical explanations of rapid urbanisation, of the underlying processes, of the nature of emerging urban systems, of the spatial structure of cities in developing countries and of the problems resulting from rapid urbanisation at national and metropolitan levels.

Social Problems in Developing Societies

Poverty, hunger and disease are well publicised facts of life in developing societies. This unit of the Course focuses on questions of poverty in selected societies, the relation between hunger, disease and poverty, and also gender issues, the role of women in development, and international aid programmes. The main area of study is Africa, but comparative reference will also be made to Latin America and South East Asia. Time is also devoted to discussing other aspects of the environment, such as energy resources, appropriate technology, economics, environmental ethics, and health and environment.

The Director
Environmental Resources Unit
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M5 4WT
ENGLAND

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Direct Dial: 061-745 5221
Telex: 668680 (Sulib)
Fax: 061-745 5999



SILSOE COLLEGE-CRANFIELD



Silsoe College is a Faculty of Cranfield Institute of Technology, a British university situated 60km north of London in Bedfordshire. Since 1968 Cranfield has been empowered by Royal Charter to award its own degrees. Cranfield now forms the largest centre of applied research and industrial technology within the British university sector.

Silsoe College became the Faculty of Agricultural Engineering, Food Production and Rural Land Use of the Cranfield Institute of Technology in 1975 (having previously been the National College of Agricultural Engineering). The College now has over 480 students studying subjects leading to the awards of BEng, BSc, Postgraduate Diploma, MSc, MPhil and PhD in Agricultural Engineering, Rural Resources Management, Land and Water Management, Applied Remote Sensing, Rural Engineering, Postharvest Technology, Plantation Management, Marketing and Management and Food Research and Technology.

Staff of the College are involved with advanced teaching, research and development and consultancy work in all aspects of agricultural and rural development in the UK and overseas. Students come to Silsoe College from countries throughout the world, making it a truly international establishment. By applying the principles of science, technology and management, Silsoe College is contributing to the development of agriculture and related industries worldwide.

Silsoe provides a complete range of undergraduate and postgraduate programmes for the rural sector. Short courses and skills training are also available. Please return the attached card for application forms and details of courses, fees, accommodation and possible sources of funding.

MSc and PG Diploma options in:

- Land Resource Management & Planning
- Range Management
- Applied Remote Sensing
- Geographic Information Systems
- Soil & Water Engineering
- Soil Conservation
- Irrigation Engineering
- Irrigation Water Management
- Drainage & Land Reclamation Engineering
- Environmental Water Management
- Rural Water Supplies
- Dryland Farming
- Engineering for Rural Development
- Transport for Rural Development
- Agricultural Machinery Engineering
- Agricultural Mechanization Management
- Agrochemicals Application Technology
- Tropical Crop Storage & Processing
- Crop Market Technology
- Postharvest Technology of Tropical Crops
- Marketing & Product Management
- Agricultural Marketing Systems for Developing Countries
- Plantation Management
- Management for Agricultural Development
- Information Technology

Three Month Post-Experience Programmes in:

- Management Development
- Microcomputer Applications in Agricultural Management
- Agricultural Water Management
- Agricultural Machinery Management
- Postharvest Technology of Grain Crops
- Postharvest Technology of Fruit, Vegetable and Root Crops
- Land Information Systems and Computers
- Geostatistics for Land Use Management

Further Information

Application forms, details of any of the courses, tuition and accommodation charges and possible sources of scholarships may be obtained by writing to:

The Student Recruitment Executive
Silsoe College
Silsoe, Bedford MK45 4DT
United Kingdom
Telephone: Silsoe (0525) 60428
Telex: 265871 (MONREF G) EUM 300
Fax: (0525) 61527

Silsoe College

POSTGRADUATE DIPLOMA — GEOGRAPHIC INFORMATION SYSTEMS

GIS Technology: geographic entities; cartography; topographic and thematic maps; digital mapping; vector and raster data; GIS components; spatial analysis; databases; data storage; data transfer; sources of data; selecting a GIS; benchmarking a GIS; future trends.

GIS Applications: census data analysis; land-use analysis; cadastral mapping; land registration; government applications; local authority and utility company applications; countryside data; analysis; data archives; data ownership; legal issues.

Model Implementation: maps as variables in an equation; review of erosion models; hydrology models; land suitability models; trafficability models; models in software; input data as maps; model implementation within a GIS.

Computer Programming: operating systems; FORTRAN programming; integrated software development.

Soil Science: physical and chemical properties of soil; textures; structures; constituents; classification and formation.

Hydrology and Water Resources: surface water hydrology and movement; groundwater resources; meteorology; runoff measurement; hydrograph analysis; pumping tests; water balance studies.

Soil Conservation: study of soil erosion as a basis for designing soil conservation schemes; water and wind erosion; erosivity; erodibility; soil loss prediction; agronomic methods of erosion control; conservation tillage; terraces; waterways; shelterbelts; gully control structures.

Economics of Resource Management: economic principles; production economics; linear programming; financial and management accounting; project planning; evaluation; farm management; environmental economics.

Resource Survey Methodology: introduction to principles of air photo interpretation; photogrammetry and remote sensing; recognition of geologic

geomorphic, vegetation and other ecological factors from aerial photography; management and planning of resource surveys; land evaluation including land capability and suitability.

Applied Remote Sensing: imaging systems including LANDSAT, SPOT and ERS; digital image processing and enhancement; optical evaluation of data; supervised and unsupervised classification of spectral signatures; ground data requirements for resource surveys.

Surveying and Photogrammetry: flight planning; ground control; triangulation; surveys; electromagnetic distance measurement; geometry of vertical, level and oblique aerial photography; rectification by stereoscope plotting; instruments; topographic and planimetric mapping; geodetic leveling.

Multivariate Analysis: sampling; multiple correlation and regression; principal components; factor and cluster analysis.

MSc — RANGE MANAGEMENT

Autumn Term

Resource Survey Methodology: introduction to the principles of aerial photographic interpretation; photogrammetry and remote sensing; recognition of geologic, geomorphic, vegetation and other ecological factors from aerial photography; management and planning of resource development. In addition, there will be a series of lectures on **Geographical Information Systems**. **Hydrology and Water Resources:** surface water hydrology and movement; groundwater resources; meteorology; runoff measurements; hydrograph analysis; pumping tests and water balance studies. **Rural Engineering Practice:** interpretation of engineering drawings; engineering materials; planning and construction of small civil engineering works; road building; site practice and administration.

Nutritional Requirements of Stock: food needs of different types and ages of stock; importance of particular constituents of food; importance of water quantity and quality in stock nutrition; food yields from grazing and browsing; need to integrate wild life food needs into the nutrient cycle. **Ecological and Social Systems in Range Management:** principles of ecology and their application in range

management; planning; rights of usage of land and land tenure; livestock in the social system; pastoralism; wild life ecosystems and their utilisation.

Introduction to Management: organisational structures; management of systems, finance and people.

Spring Term

Water Supplies and Storage: water industry; demand for water and implications for scheme design; reservoirs; farm dams; pumps and pipelines; water quality standards and controls.

Applied Remote Sensing: imagery systems; Landsat, SLAR, SAR, MSS data; digital image processing and enhancement; optical evaluation of data; supervised and unsupervised classification of spectral signatures; ground truth requirements for data analysis and project planning.

Soil Conservation: mechanics of water and wind erosion; rainfall erosivity and soil erodibility; erosion control by mechanical and agronomic means; experimental techniques for evaluating erosion incidence under different management systems.

Range Management: Principles and Practice: land and range classification; identification of particular problems of

tropical soils under grazing regimes; range recording; biomass evaluation; paddock planning and herd structures; infrastructural elements associated with rangeland production.

Economics of Range Management: basis of economic evaluation of range management systems; cost/benefit analysis applied to different management systems; economics of wild life and game park systems of utilizing range land; political situations to be considered in range management systems; tourism.

Summer Term

Two integrated study assignments will be carried out.

A Survey Project: students will receive training and will be given extensive practical experience in various aspects of surveying which are relevant to the requirements of a range manager.

A Ranch Plan: practical exercises carried out as groupwork involving investigation in the field, using the interpretation of various forms of remotely sensed data, the identification of ecological systems, the evaluation of carrying capacity and the preparation of paddock plans, water distribution and the design of stock handling facilities suited to the area and the system.

MSc — SOIL CONSERVATION

Autumn Term

Soil-Plant-Water Relations: physical properties of soil and water; water retention and availability in soils; soil water movement; crop-water relations; salinity; evapotranspiration and crop water requirements.

Resource Survey Methodology: principles of airphoto interpretation and remote sensing; photogrammetry; integrated survey; land evaluation including land capability and suitability.

Land Improvement Engineering: Surveying; computation of earthwork volumes; planning and techniques for land clearance and earthwork construction.

Plus three from:

Agricultural Development Systems: purpose, nature, input-output relationships and stability of farming systems; internal and external factors causing change in farming systems; alternative developmental pathways.

Soil Science and Soil Mechanics: soil texture, structure and constituents; classification and formation; soil shear strength; techniques for predicting forces on soil engaging bodies.

Hydrology and Water Resources: surface water hydrology and movement; groundwater resources; meteorology; runoff measurement; hydrograph analysis; pumping tests; water balance studies. **Hydraulics:** hydrostatics; principles of fluid mechanics; water flow in pipes and

open channels; hydraulic structures; pumps; hydraulic models.

Soil Physics and Soil Mechanics: descriptive and analytical treatment of soil water movement and soil strength; saturated and unsaturated flow; flow equations and numerical solutions; soil piping and instability; concept of soil shear strength; techniques for predicting forces on soil engaging bodies.

Introduction to Management: organisational structures; management of systems, finance and people.

Spring Term

Soil Conservation: study of soil erosion as a basis for designing soil conservation schemes; water and wind erosion; erosion; erodibility; soil loss prediction; agronomic methods of erosion control; conservation flags; terraces; waterways; shelterbelts; gully control structures.

Land and Water Management: Watershed management and land use; erosion control in forested, urban, industrial and recreational areas; slope stability and mass movement; erosion control on roads and streambanks; geotextiles; soil stabilisers; flood control; impounding and retention works; channel changes; water retention and oil trapping dams; offstream storage. **Erosion Assessment, Experiment and Modelling:** Erosion surveys; erosion risk

assessment. **Experimental methods:** field reconnaissance; field erosion plots; rainfall simulation; runoff rigs; wind tunnels; modelling; empirical and physically-based models; application to different spatial and temporal scales; use in erosion assessment and conservation design.

Theory and Practice of Soil Conservation Planning: Physical planning of soil conservation; social, economic and political factors affecting soil conservation planning; agrarian structures and soil conservation; effect of farm size and land tenure; farmer perception and psychology; cost/benefit analysis; extension and advisory services; soil conservation policies and legislation. **Irrigation and Drainage:** irrigation need; design of surface, sprinkler and trickle irrigation systems; irrigation scheduling and operation; drainage need for both humid and irrigated land; design and installation of surface, subsurface pipe and mole drainage systems; drain maintenance.

Summer Term

Integrated Study Assignments: **Soil Conservation Design:** practical exercises carried out as groupwork involving field investigation, aerial photography interpretation, design of soil conservation measures and their installation in the field; the exercises cover water and wind erosion.

MSc — APPLIED REMOTE SENSING

Physical Principles & Technology: principles of electromagnetic radiation; sources of radiation; the atmosphere and its effects; principles of radiometry and reflectance; detectors; general sensor technology. **Meteorol.** NOAA/TIROS, Landsat, SPOT, MOS-1, IRS-1, Space shuttle experiments; receiving stations; airborne systems, radiometers, image processing hardware.

Image Processing & Analysis: properties of digital imagery and comparison with photography; image rectification; cosmetic corrections for scanner malfunctions and atmospheric; contrast stretching; digital filtering; computer aided classification procedures; data clustering and eigen-image formation; practical training on GEMS image processing system.

Applied Remote Sensing I: relationship of earth's surface characteristics to reflectance properties; causes of variation in the reflectance of soil, water and vegetation; ratios and vegetation indices formed using several wavebands and their relation to crop

cover, biomass, crop stress and yield; field radiometry.

Applied Remote Sensing IIa: principles of microwave radiation; general technology of sensors, SLAR and SAR systems; SIR programme; ERS-1 programme; applications of microwave data.

Applied Remote Sensing IIb: planning a quantitative remote sensing study; techniques for classification accuracy assessment; area frame sampling; ground survey and data collection techniques.

Photogrammetry & Surveying: flight planning; ground control; triangulation surveys; electromagnetic distance measurement; geometry of vertical, tilted and oblique aerial photography; rectification by stereoscopic plotting instruments; topographic and planimetric mapping; geodetic levelling.

Geographic Information Systems and Cartography: thematic maps; geographic data modelling and manipulation; data structures; vector,

rasier and quadtree systems; GIS hardware; GIS software; GIS trends; principles of cartography; map projections; digital cartography and terrain modelling.

Case Studies: agricultural and soil surveys; forestry, range management and erosion, hydrology and sediment transport, thermal pollution, bathymetry, geology, mineral and oil exploration, weather forecasting and climatology.

Resource Survey Methodology: introduction to principles of air photo interpretation; photogrammetry and remote sensing; recognition of geologic, geomorphic, vegetation and other ecological factors from aerial photography; management and planning of resource surveys.

Multivariate Analysis: sampling; multiple correlation and regression; principal components, factor, cluster analysis.

Computer Programming: operating systems; FORTRAN programming; integrated software development.

MSc — LAND RESOURCE MANAGEMENT

Autumn Term (6 units)

Resource Survey Methodology: principles of airphoto interpretation and remote sensing; photogrammetry; integrated survey; land evaluation including land capability and suitability

Multivariate Analysis: sampling; multiple correlation and regression; principal components; factor cluster analysis

Soil/Plant/Water Relationships: soil water retention; soil water movement; water uptake and transpiration; salinity; evaporation

Introduction to Management: organisational structures; management of systems; finance and people

Geographical Information Systems: geographical data modeling and manipulation; GIS hardware and software

Plus one unit from:

Hydrology: precipitation; surface and subsurface processes; hydrographs; water balance; groundwater

Agricultural Development Systems: farming systems — productivity, stability

factors causing change; agricultural extension; alternative developmental pathways

Economics for Management: principles of micro-economics; techniques of economic analysis

Spring Term (5 or 6 units)

Environmental Classification and Conservation: legal structure controlling rural land use; classification systems for environmental practice; bodies involved in conservation; National Parks; recreational planning; wildlife preservation; environmental impact assessment

Economics of Resource Management: linear programming; farm management; environmental management policies applied to conservation, recreation, pollution

Applied Remote Sensing: imagery systems including LANDSAT, SLAR and MSS data; digital image processing and enhancement; optical evaluation of data; supervised and unsupervised classification of spectral signatures

ground truth requirements for resource surveys

Soil Conservation: mechanics of water and wind erosion; rainfall intensity; soil erodibility; erosion control by mechanical and agronomic methods; experimental techniques

Irrigation and Drainage: soil moisture and salinity control; irrigation principles and techniques; drainage methods; scheme design and evaluation

Microcomputer Applications (optional): micro systems; spread sheets; data base management; mathematical and statistical packages

Summer Term (2 units)

Fieldwork: practical work in data collection; resource survey; land assessment; report writing; layout and production; students work as a team on a project for a local authority or similar body

Integrated Resource Planning: groupwork on land evaluation; project appraisal and planning at regional and farm level

POSTGRADUATE DIPLOMA — LAND RESOURCE PLANNING

Autumn Term (6 units)

Resource Survey Methodology: as MSc programme

Soil/Plant/Water Relationships: as MSc programme

Hydraulics: hydrostatics; principles of fluid mechanics; flow in pipes and channels; hydraulic structures; pumps; hydraulic models

Geographical Information Systems: as MSc programme

Introduction to Management: as MSc programme

Plus one unit from:

Managerial Economics: project planning; support studies; feasibility studies; financial and economic evaluation; accounting; national socio-economic aspects

Mathematics: equations; functions; partial fractions; trigonometry; differentiation; integration

Crop Production: principles of plant growth; crop science; crop environment; management of temperate and tropical crops

Hydrology: as MSc programme

Spring Term (5 units)

Land Resource Planning: process of management and decision-making; study of national resource planning systems

FAO and World Bank development loan requirements; infrastructure and environmental impact studies

Soil Conservation: man and soil erosion; rainfall erosivity; soil erodibility; design and construction of soil conservation works

Applied Remote Sensing: as MSc programme

Together with two units from:

Irrigation: crop water requirements and crop responses to irrigation; design of surface, sprinkler and trickle systems; alternatives to irrigation

Drainage: benefits of land drainage; surface and subsurface and pump schemes; design theories and practice; moiling; subsoiling; and zone drainage and salinity

Water supplies and storage: water industry; demand for water and implications for scheme design; reservoirs; farm dams; pumps and pipelines; water quality standards

Environmental Classification and Conservation: as MSc programme

Summer Term (2 units)

Surveying: practical exercises in field surveying techniques in relation to land grading, drainage, irrigation and earth dam construction

Integrated Resource Planning: as MSc programme

Silsoe College

Cranfield

MSc course in LAND AND WATER MANAGEMENT at Silsoe College

a new option in

ENVIRONMENTAL WATER MANAGEMENT

Effective management of the environment requires a thorough understanding of the interactions between water, plants and soil and of the engineering principles associated with the maintenance and control of water status. Examples of such environments are where land is used for the disposal of polluted water, where an existing environment is to be protected from outside influences or where there is a change in land use; specific examples include recent work at Silsoe College on the water regime requirements of wildlife habitats, river corridor audits and landfill hydrology and leachate control.

Eligibility

Candidates will normally have undertaken a degree or equivalent in a physically or biologically based discipline. Such courses include engineering, environmental science, soil science, agriculture, physical geography or ecology. All students entering directly onto the course are expected to have a good level of numeracy and be suitably motivated.

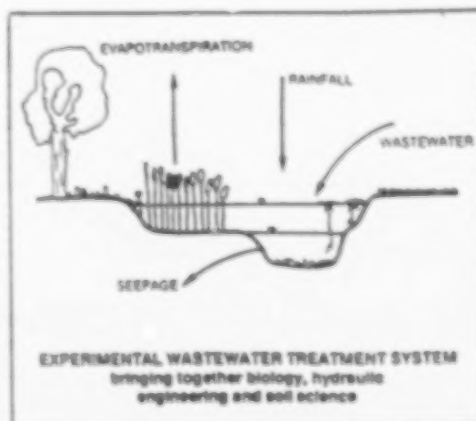
Well motivated students coming from less physically based disciplines will still be considered.

Aims and Objectives

The application of engineering and management principles to the problems outlined above requires compromise and economic solutions to be found.

The new MSc course in ENVIRONMENTAL WATER MANAGEMENT develops the basic principles of hydrology and soil, plant, water interactions into an understanding of how to optimize the soil water environment for plant growth, erosion control, and non-agricultural land use. This is achieved through studies of the basic sciences associated with biology, engineering and soils and through applied studies in land drainage, soil conservation, water management, ecological systems and environmental economics.

As a result of undertaking this course participants will be able to analyse water related ecological systems in order to design efficient and cost effective management and engineering structures for them.



Employment Prospects

Typical employers in Europe are expected to include consultant engineering companies, local and national authorities, conservation groups, agricultural consultants, farmers, and companies working in specialist non-agricultural land management such as landfill.

Silsoe College

COURSE OUTLINE**Autumn Term**

Soil Plant Water Relationships
 Soil Physics
 Hydrology and Water Resources
 Land Improvement Engineering
 Environmental Economics

optional courses which may be taken in the autumn term:

Hydraulics
 Soil Science and Management
 Ecology

Spring Term

Environment Engineering and Management
 Applied Ecology and Environment Assessment
 Water Quality and Quality Testing
 Land Drainage and Reclamation
 Soil Erosion Assessment and Prevention

Integrated Study Assignment Summer Term

These studies will involve the analysis of agricultural and non-agricultural land in terms of the engineering design requirements for a suitable environment. Aspects of Environmental Impact Assessment will be included in this integrated design study. Two ISAs will be run over a four week period. These are drawn from the following:

- (a) The assessment of infiltration rates and quantities through landfill capping and leachate treatment and control.
- (b) The design of a sub-irrigation system for the maintenance of water status in a wet-land area.
- (c) An environmental audit of the Filt valley from Greenfield to Claphill.
- (d) The hydrology of Flitwick Moor SSSI
- (e) Seepage and water quality assessment from Agricultural Land.
- (f) The impact of seawater inundation on grassland.

These are all areas in which Silsoe College has already worked.

Personal Project

Typical project titles:

- (a) Sub-irrigation as means of water control in wetland areas.
- (b) The design of small water retaining structures for water supply and environmental enhancement.
- (c) Optimizing pump drainage systems under agricultural and environmental constraints.
- (d) Water quality aspects of water retention in small dams.
- (e) Water requirements for survival and growth of non-agricultural plants.
- (f) Environmental impact assessment of water control structures.

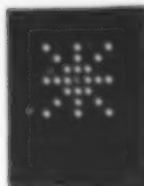
Further Details:

The Student Recruitment Executive
 Silsoe College
 Silsoe, Bedford, MK45 4DT
 United Kingdom
 Telephone (0525) 60428
 Fax (0525) 61527
 Telex 265871 (MONREF G) EUM300

The British Council

Science teacher education: a framework for professional development

29 March –
10 April 1992
London



Developments in primary science education

11 – 22 May 1992
Liverpool

Developments in primary science education

The course will examine in detail the major concerns and activities in primary science in the UK as well as their international context and implications. Major research and development projects in the area of science and technology relevant to the primary phase will be represented. The practical implications for policy and practice will be the overriding concern. The course will include workshop activities and the exchange of information and ideas about local circumstances and solutions. Visits to centres of particular interest will include:

- The Maritime Museum, Liverpool;
- The Natural History Centre in the main museum of the National Museums and Galleries on Merseyside;
- The Museum of Science and Industry, Manchester.

The programme will include consideration of the following:

Learning in science: how it is conceptualised and approached through research projects

Research into children's ideas: classroom strategies for helping children to develop science process skills and concepts

Contexts of learning: the diffusion of information to schools and the wider community will be considered

Out of school learning: the opportunities available to children and their families, including museums, interactive science and technology centres and printed and electronic media will be considered through discussion and direct experience

Curriculum development and evaluation: principles and practice

Pupil assessment: theoretical considerations, continuous assessment, practical assessment and summative assessment

Teacher education: pre-service and in-service, including a consideration of teachers' own understanding of science concepts and distance learning possibilities

Science teacher education: a framework for professional development

In the past quarter of a century major changes have taken place in science education throughout the world. These changes have been influenced by a variety of issues, among which are:

- the place of science in the education of all pupils
- whether the programmes should be modular science, integrated science or separate sciences
- the relationship between science, technology and society
- the introduction of computer technology into the laboratory, the classroom and the home
- the assessment and reporting of pupil progress and achievement
- research into the ways pupils learn and react to science.

These changes have major implications for science teacher education, and we must decide how we react to their challenges and how our teacher education programmes can prepare teachers for science education into the twenty-first century.

This international event will provide an opportunity for those who are now shaping the future of science teacher education to explore advances in science teacher education, to pool their ideas and experiences and to look to the future. It is specifically aimed at policy makers, senior and experienced teacher educators, science inspectors and advisers, curriculum planners, curriculum development specialists, university teachers concerned with science teacher education and others with an interest in, and concern for, science teacher education.

The seminar is based upon a consideration of questions in the following six areas:

- What is the nature of science education for schools? What curriculum aims should it serve? How are its boundaries (for example in relation to technology or social issues) to be defined? How can we design courses that will help science teachers in training form their own opinions on these issues?
- To what extent should teacher education reflect and shape societies' values and cultural traditions?
- How can we aid their professional development so that science teachers have the skills they

need in classroom and laboratory, and are confident enough to make a contribution to educational change throughout their career? What are the alternative patterns for teacher education?

- What can the results of research tell us about new ways to approach children's learning and classroom practice, and how can we ensure that teacher educators, science teachers and trainees make use of them?
- How is the work of pupils, teachers and trainees to be evaluated? How can the profession conduct such evaluations and make use of the results?
- How does the structure of national and regional administration affect the management of teacher education? What alternatives are there? Should we be pressing for change?

To rethink science teacher education it is necessary to give careful attention to each of these six areas. This will be done in the seminar through lectures, discussions and workshop sessions so that participants can receive and appraise presentations from experts in the separate areas.

The topics covered will include:

- recent developments in science education
- the delivery of science education for a diversity of pupils
- the management of education at national and local level
- the impact of recent research in science education
- the professional development of science teachers
- different models of teacher education
- methods and techniques which can be used in science teacher education
- the partnership between schools and institutions of teacher education
- the influence of modern technology in science education and its consequences for science teacher education
- the assessment of teacher training students and of teacher education programmes
- the public understanding of science and informal science education.

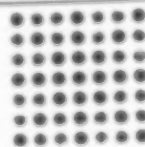
British Council courses and seminars

As part of its role to encourage cultural and scientific exchanges between Britain and other countries, The British Council has been running a successful programme of short courses and seminars for over 40 years. These are directed by leading British specialists, many with world-wide reputations. Their aim is to enable senior academic and professional people to learn about recent developments and new ideas in their fields and to participate in international discussion at a high level.

Applications

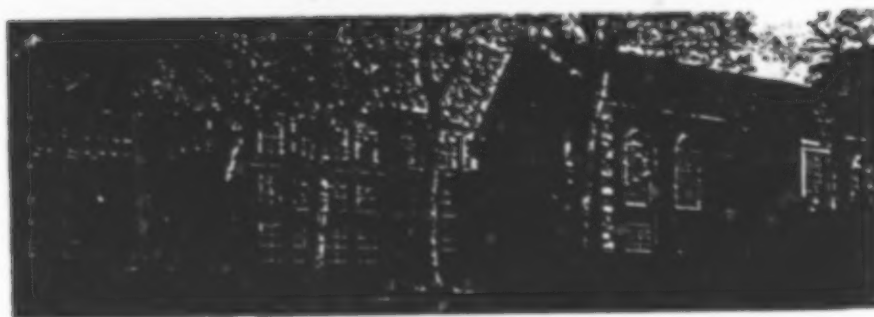
Application forms may be obtained from your nearest British Council Office or from Courses Department, The British Council, 10 Spring Gardens, London SW1A 2JN (telephone: 071-389 4406/4264/4232).

The British Council





INTERNATIONAL DIVISION



MANAGEMENT OF THE- ENVIRONMENT

1992

COURSE 16

24 AUGUST - 13 NOVEMBER

INTERNATIONAL TRAINING PROGRAMME

The Royal Institute of Public Administration, founded in 1922, is the leading independent British institution dealing with policy making and management in the public sector. We aim to help improve the effectiveness of public administration and to increase public understanding of its scope and processes in the UK and overseas. RIPA addresses both the needs of public authorities and the needs of the public they serve.

From the early 1950's the Institute came into increasing contact with overseas countries and provided a variety of services to government and international agencies. Since then we have developed a major worldwide programme of training courses and consultancy for the public sector overseas.

INTRODUCTION

This twelve-week course has been designed for officials who are assisting in the development and, most importantly, the management of policies related to the environment. Concern over our ability to manage the environment effectively has now reached major proportions, especially as environmental issues are becoming increasingly international or indeed global in nature. The development of appropriate administrative and management mechanisms to implement environmental policies effectively will be a key focus of this course.

COURSE AND TEACHING METHODS

The course is designed to be highly participative and lecture sessions will be balanced by discussions, syndicate work, exercises and visits. The visits will enable participants to see at first hand how various environmental issues are being tackled in Britain. Ample opportunity will be provided for participants to draw on each other's

experience, both in a national and an international context.

The programme will include a short attachment to a British government organization or local authority (possibly outside London) to gather first-hand experience of the issues and problems involved in environmental management. Participants will be expected to write a report and present their findings to their colleagues towards the end of the course and also to prepare a personal action plan prior to their return home.

OBJECTIVES

The course will help participants to:

- 1 Review the impact of environmental issues on the work of government, both at a national and an international level
- 2 Undertake a comparative analysis of administrative structures which facilitate implementation of environmental policies
- 3 Develop action plans appropriate for their particular countries and where possible

establish networks between countries for co-operation and development.

ELEMENTS OF THE COURSE

- 1 The role of information technology and science in contributing to the development, implementation and monitoring of policies.
- 2 The legal and statutory framework for effective management of the environment: problems and issues.
- 3 Government structures for environmental management: accountability, responsibility, planning, co-operation and integration of government departments and organizations.
- 4 Cross-national co-operation and integration, with particular reference to regional co-ordination.
- 5 Financing environmental management.
- 6 The role of non-governmental organizations, pressure groups, etc.

QUALIFICATIONS

It is expected that participants will be senior officials with considerable management experience within the public sector or in the civil service and with some responsibility for developing or implementing environmental policies. Please note that this course is essentially a management course and, while delegates will be expected to have an appreciation of the scientific background to some of the issues, they are not expected to be scientists. Proficiency in English is essential.

AWARDS

The Royal Institute of Public Administration will award its own certificate to participants who complete the course.

HOW TO APPLY

Applications for places on courses should be made as soon as possible and ideally should reach RIPA eight weeks before the starting date. Full information about candidates should be supplied including details of age, education, proficiency in English, career and potential future employment. For training to be financed under aid programmes, governments should approach the local agency representative concerned.

FURTHER INFORMATION

For leaflets giving full details of each of the courses, including current fees, and for exact dates of courses to be run in 1993, please write to the Administrative Services Manager, Royal Institute of Public Administration, International Division, Regent's College, Inner Circle, Regent's Park, London NW1 4NS. Tel: 071-935 0496
Fax: 071-487 7746 Cables: PUBADMEN London
Telex: 262433 Ref 1983.



BASIC FOOD MICROBIOLOGY TRAINING COURSE

The Natural Resources Institute (NRI) invites nominations for its 12-week Microbiology Training Course.

This biennial course, designed for individuals from developing countries, provides basic training in the principles of food microbiology. The course covers various aspects of food microbiology with a bias towards foods produced by and exported from developing countries. As well as the techniques and principles of food microbiology, important and related topics such as factory hygiene, good manufacturing practice, laboratory design and water quality are addressed.

COURSE OBJECTIVES

As a result of attending this course participants will be able to:

- sample foods for microbiological analysis
- enumerate microbes responsible for food spoilage
- isolate and identify food-borne bacterial pathogens
- assess microbial quality and safety of foods

ABOUT THE INSTITUTE

NRI is the scientific arm of the Overseas Development Administration (ODA). The Institute is an internationally recognised centre of expertise on the renewable natural resources sector in developing countries.

COURSE EMPHASIS

The course covers the principles of food microbiology with particular reference to:

- the role of micro-organisms in the spoilage of tropical foods.
- utilization of micro-organisms in low-cost preservation systems.
- hygiene and quality assurance in the food industry.
- design and operation of a food microbiology laboratory.
- rapid detection methods for food-borne pathogens.

- understand both intrinsic and extrinsic factors which affect microbial growth
- understand principles of food quality assurance systems
- perform microbiological analysis safely and efficiently
- interpret and present results clearly and concisely

NRI's main areas of expertise are:

- resource assessment and farming systems
- integrated pest management
- food science and crop utilisation

The staff of around 500 work on a range of multidisciplinary projects. NRI has recently moved to a new site in Chatham, Kent which is about 30 miles south east of central London.

COURSE CONTENT

Formal teaching is combined with discussion groups, laboratory practicals, demonstrations and visits to research establishments and commercial organisations in Britain. Time will be allocated for students to work on short research projects. The subjects covered in the programme include:

- nature of micro-organisms, bacteria, moulds and yeasts
- enumeration of micro-organisms
- isolation and identification of indicator bacteria, pathogens and spoilage organisms
- public health aspects of food microbiology
- hygiene and quality assurance in the food industry
- assessment of microbial spoilage of foods and methods for its prevention
- use of physical and chemical agents for food preservation
- use of micro-organisms in food fermentations
- study of microbial ecology of the following commodities: meat, fish, dairy products, fruit and vegetables, poultry, eggs, canned foods, dried and intermediate moisture in foods, cereals and spices
- sampling plans and guidelines for micro-organisms in foods
- design and operation of a microbiology laboratory



SPONSORSHIP

As with all training opportunities in Britain for personnel from developing countries, financial support for official nominations can be requested through the British Technical Co-operation Training Programme (TCTP). Information on the TCTP can be obtained from the British Council.

British Embassies and High Commissions. In addition, NRI welcomes formal nominations from bilateral or multilateral donors such as the European Community, the United Nations and the World Bank.

COURSE DETAILS

Course title:	Basic Food Microbiology
Location:	Microbiology and Fermentation Section and NRI's Training Centre, Chatham, UK.
Duration:	12 weeks
Frequency:	Every two years from April to June
Places:	Up to 12
Accommodation:	Non-residential

ENTRANCE REQUIREMENTS

There are no formal academic requirements but candidates are expected to have had some experience in microbiology, a related scientific discipline, or food technology. The course will be conducted in English and applicants must produce evidence of proficiency in the language; for example, by passing the British Council's English examination.

FURTHER INFORMATION

Additional copies of this brochure (available free of charge) and further information (e.g. current course fee, accommodation available in Chatham) are available from The Training Contracts Officer, to whom applications should be sent.



Training Contracts Officer
Natural Resources Institute
Central Avenue
Chatham Maritime
Kent ME4 4TB
United Kingdom

Telephone:	44 634 880088 (International) 0634 880088 (National)
Telex:	263907/B ODM LDNG
Telefax:	44 634 880066/880077



1992 TRAINING FOR ENVIRONMENT AND RESOURCES PLANNING

13TH JULY - 26TH SEPTEMBER



Hunting Technical Services Limited

IMA in association with HTS are now able to offer three courses, reflecting different aspects of environmental management and land resource planning. The three courses run separately, but the complementary nature of many topics has enabled us to design an integrated programme in which students can select options from each course.

Particular emphasis is given to practical work and field visits, both in the UK and abroad. In 1992 all students will have the opportunity to participate in the one week study tour to Spain.

The three courses comprise the two already established in Land Resource Survey and Planning and in Environmental Management for Development Planning, with an additional course focusing on the role of women in environment. These will appeal to a wide range of participants from all over the world but especially men and women working as:

- environmental legislators, administrators and executives
- development planners and project managers
- environmental scientists, foresters and agriculturists
- agricultural, irrigation and civil engineers
- land resource planners and surveyors
- university and college staff
- ngo staff

As places are limited, applications should be made as early as possible to:

Course Administrator
IMA
36 Robertson Road,
Brighton,
BN1 5NL,
United Kingdom
Telephone: (0273) 559000
Facsimile: (0273) 580045

For participants who are not able to attend a longer course, we are able to offer certain short courses or special prepared individual programmes. These courses will be run during the period July - September 1992 with the exact starting dates given on application. The courses will be a combination of teaching from the main course and specially taught sessions.

- Introduction to GIS - 2 weeks - £1400
- Introduction to remote sensing - 2 weeks - £1400
- Environmental principles and practices in the development planning process - 3 weeks - £2100
- Gender aspects of environmental planning - 1 week - £800
- Soil conservation techniques - 1 week - £800
- Protected areas management - 2 weeks - £1400
- Basic computing skills - 1 week - £800
- Special programmes - £120/day

COURSE FOR WOMEN IN THE ENVIRONMENTAL MANAGEMENT PROCESS

The course is intended primarily for women working within government and non-governmental organisations concerned with creating a sustainable environment. It will develop the knowledge and skills required for the effective planning and management of environmental programmes in which women play an integral part. The course will work towards the ideal of the inclusion of gender analysis into all mainstream environmental planning, and in that context will welcome suitable male participants.

COURSE CONTENTS

The subjects to be covered include:

Maintaining a Sustainable Environment

- Sustainable development, women's integral role in the development process
- Environmental assessment, taking gender into account
- Environmental planning using gender planning techniques
- Land resources and survey audit of women's activities
- Environmental economics from a gender perspective
- Environmental conservation, indigenous technical knowledge and women as culture carriers

Resource Management

- Water and sanitation, access and requirements. Women as water managers
- Energy, biomass, fuel efficient stoves, forests and fuel, gender aspects of social forestry, biogas
- Human Settlements, women friendly transport and housing policies
- Health care. Women's function as carers, primary health care, population, Aids
- Education and training, using women's organisations as environmental messengers. Literacy, communications and gender

LAND RESOURCE SURVEY AND PLANNING COURSE

The Land Resource Survey and Planning course has two principal aims: to examine a wide range of resource survey techniques and to introduce the computer-based technology tools that are an increasingly important part of land resource assessment. By focusing on the practical applications of remote sensing and geographic information systems (GIS), through practical course work and hands-on experience, each participant will gain a thorough understanding of how such techniques can be used to perform his or her job more effectively.

To achieve these aims, the course content will broadly follow the pattern shown opposite, whilst also allowing time for an individual to specialise in subjects appropriate to their interests and experience.

COURSE CONTENTS

Principles of Resource Survey

- Aerial photography interpretation
- Soil surveying
- Land capability assessment
- Agricultural forestry and geology surveys

Ground Survey Techniques

- Land survey and topographic mapping
- Field sampling techniques

Environmental Management

- Agro-ecological zonation
- Sustainable development and the environment
- Environmental assessment and planning

Computing Techniques

- Word processing and statistical packages
- Data analysis

Remote Sensing

- Principles of remote sensing
- Visual interpretation techniques
- Radar and microwave studies
- Computer techniques in remote sensing and digital analysis
- Land cover classification techniques and data analysis

Geographic Information Systems

- Principles of GIS
- Map digitisation and video scanning techniques
- Data analysis

Map and Report Production

- Map production techniques including digital cartography
- Presentation skills and report writing

Methods of Utilising Results

- Planning techniques
- Management techniques and work planning
- Personnel management and training technical staff
- Role of land resources planning in Rural Development

Field Trips and Visits

- Residential field trip in Spain
- Study period at Hunting Technical Services
- Visits to other organisations involved in land resources survey techniques

ENVIRONMENTAL MANAGEMENT COURSE FOR DEVELOPMENT PLANNING

The course covers the role of environmental management in the identification, planning, implementation and evaluation of rural development projects. The approach is founded on the principles established by major development agencies, including the World Bank, Asian Development Bank, European Community and the British Overseas Development Administration.

Students will obtain a thorough grounding in environment theory and methodology, illustrated by case studies for a range of development activities and socio-physical backgrounds.

Considerable emphasis will be placed on practical and project work based on examples from many different parts of the world including field visits in the UK and Spain.

COURSE CONTENTS

The subjects to be covered include:

Environmental Principles and Practices in the Development Planning Process

- Sustainable development: the development planning process and its environmental components
- Environmental baselines: physical, biological and human resources
- Agroecological zones: a spatial framework for environment applications
- Environmental assessment and post-evaluation: initial screening and scoping, IEE, EIA, environmental audit, environmental economics
- Environmental planning: technical, institutional, legal and social measures
- Environmental implementation: mitigation, regulation and public awareness
- Environmental monitoring: early warning system and long-term trends

Technical Approaches

- Rapid Rural Appraisal techniques
- Computer models and techniques
- Remote Sensing data, imagery and techniques
- Geographical Information Systems (GIS)
- Presentation: production of environmental reports, proposals and maps
- Management and training techniques
- Residential one-week field course in Spain: visits to environmental centres in different areas of England and practical field days in the Brighton area

Environmental Issues and Impacts - Applied Environmental Management

- Soil and water conservation: soil erosion and degradation, conservation practices, watershed management, flood control, desertification
- Agroenvironmental pollution: fertilisers and pesticides, agroindustrial waste, salinity and waterlogging, land reclamation and drainage, sewage effluent re-use
- Ecological issues: wetlands and water resources, coastal ecosystems, fisheries and aquaculture, forestry and agroforestry, rangelands and livestock, wildlife, national parks and other preservation areas
- Mining and infrastructure issues: opencast mining and quarrying, landfill and land restoration, contaminated land, roads and pipelines, health and safety, oil pollution
- Social issues: demography, human carrying capacity, settlement, health and hygiene, gender and age

Conservation Education Training

The International Centre for Conservation Education (ICCE) works to promote greater understanding of global environmental issues and sustainable development.

Together ICCE and its trading subsidiary, ICCE Services, provide conservation education training courses.

ICCE's courses evolved in response to requests from developing countries for practical training in communication skills and the development of simple and effective educational materials.

Students attending early courses were largely education officers from societies and government departments involved with wildlife conservation. As the need for sustainable development becomes more widely accepted, the benefits of such training are being recognised by an expanding range of professionals, including teachers, ecologists, resource managers and project leaders.



THE 1992 ICCE CONSERVATION EDUCATION FOUNDATION COURSE

May 4th to June 26th 1992

COURSE AIMS

The course aims to give participants -

- * an increased awareness and understanding of environmental issues
- * exposure to a variety of environmental education programmes
- * an understanding of conservation education techniques and practice
- * the practical skills needed to prepare and present appropriate conservation education resources
- * the ability to pass on their skills and knowledge to others

COURSE CONTENT

Foundation seminars provide an up-to-date view of the global issues and stress the importance of key works eg, the World Conservation Strategy, the Brundtland Report and UNCED. These seminars, together with visits to other centres running environmental education programmes, introduce the students to a wide range of educational materials, methodology and equipment. A strong emphasis on practical training provides the opportunity for trainees to try out a variety of approaches and ideas, enabling the acquisition and development of appropriate conservation education skills. The use of role play, simulation games and drama is also explored. The course includes an introduction to basic graphic design and printing, and sessions on the development of slide/tape material, maintenance and use of audiovisual equipment, sound recording, the use of computers and video, and more. There will also be some opportunity to develop photographic techniques.

APPLICATION

Applicants should complete the application form and return it, with a supporting letter from a referee and a current Curriculum Vitae (or Personal History) to:-

Adam Adamou, Training Coordinator, ICCE, Greenfield House, Guiting Power, Cheltenham, Glos GL54 5TZ, United Kingdom

COURSE COSTINGS

Tuition, and study visits	£ 2600
Training materials	£ 180
Accommodation	£ 700
Meals at training centre	£ 400
Transport (excluding air fare)	£ 240
Per Diem (recommended minimum £ 60 per week)	£ 480
TOTAL UK	£ 4600

IMPORTANT INFORMATION

As places are limited, applications for the course should be made as early as possible.

Also the process of obtaining a sponsor takes considerable time, so please act immediately and make sure that your potential sponsor is aware of the following:

- * Your course fees must be received by ICCE prior to the commencement of the course or you may not be eligible for the course.
- * It is likely that your place on the course will be confirmed less than six weeks before the start date of the course, therefore the ICCE invoice will be raised during this period and must be paid by your sponsor on receipt, to ensure that the funds reach ICCE in time.

For further information about ICCE training courses please contact:

Training Coordinator
International Centre for Conservation Education
Greenfield House, Guiting Power, Cheltenham
Glos. GL54 5TZ, UK.
Telephone: 0451 850777 Fax: 0451 850705
Telex: 94081169 GREEN



ICCE International Centre for Conservation Education

promoting greater understanding of conservation and the environment



D.E.S.E.



DIPLOME EUROPEEN
EN SCIENCES DE
L'ENVIRONNEMENT

Le D.E.S.E. est un programme commun d'études universitaires post-graduates, réalisé dans les régions frontalières de quatre pays de la C.E. (Allemagne, Belgique, France, Grand-Duché de Luxembourg) par sept institutions universitaires.

Le D.E.S.E. est bénéficiaire de subventions de la Communauté Européenne.

**POURQUOI LE DIPLOME EUROPEEN EN
SCIENCES DE L'ENVIRONNEMENT ?**

LE D.E.S.E. ET L'OPTIQUE COMMUNAUTAIRE...

Les différents programmes d'action communautaire en matière d'environnement reconnaissent la nécessité d'une éducation à l'environnement en tant qu'action complémentaire de toutes les actions spécifiques. Appliquée à la formation académique, la complexité d'une éducation (enseignement et recherche) pluridisciplinaire et intégrée excède les possibilités d'une seule institution universitaire et, très souvent, d'un seul Etat membre. La recherche des moyens pour intensifier la coopération universitaire intra-communautaire a été concrétisée par la mise en place des "Programmes communs d'Etudes", suivi récemment par le programme "ERASMUS" en ce qui concerne la mobilité des étudiants.

Poursuivant les mêmes objectifs de pluridisciplinarité, de coopération transnationale et de mobilité des étudiants, le D.E.S.E. jouit de la reconnaissance de ces deux programmes d'actions de la Communauté Européenne.

INFORMATION

SECRETARIAT DU D.E.S.E.
F.U.L.
Avenue de Longwy, 185
B-6700 ARLON

Le DESE

SES OBJECTIFS

- approfondir les études universitaires précédentes dans le domaine de l'aménagement et de l'analyse de l'environnement
- intensifier la coopération transfrontalière dans le domaine des sciences de l'environnement
- former des spécialistes capables d'insérer la dimension de l'environnement dans toutes les décisions et à tous les niveaux

SON PROGRAMME D'ETUDES

- formation générale pluridisciplinaire en environnement
- formation à et par la recherche :
 - option "aménagement de l'environnement"
 - option "analyse de l'environnement"
- formation complémentaire

DEROULEMENT DES ETUDES

- durée : deux années académiques
- langues véhiculaires : l'allemand et le français (parallèlement à la formation : cours de mise à jour des connaissances linguistiques)
- 1er semestre : cours, séminaires et travaux pratiques en vue d'une formation générale pluridisciplinaire
- 2ème, 3ème et 4ème semestres :
 - réalisation d'un projet de recherche sur l'environnement transfrontalier
 - programme d'enseignement spécialisé dans les universités participantes
- formation complémentaire : trois séminaires, d'une semaine chacun sur les aspects des droits nationaux/européen et de la coopération transfrontalière en matière d'environnement et les institutions des Communautés Européennes
- la valeur scientifique du D.E.S.E. est reconnue par les autorités académiques des universités participantes et par différentes institutions internationales

INSTITUTIONS UNIVERSITAIRES PARTICIPANTES

- Fondation Universitaire Luxembourgeoise (F.U.L.)
185, Avenue de Longwy - B-6700 Arlon
Tél. : (0)63/ 22.03.80

- Université de Metz
B.P. 794 - Ile du Saulcy - F-57012 Metz Cedex
Tél. : 87 30.26.63

- Université de Nancy I
24-30, Rue Lionnois - F-54013 Nancy Cedex
Tél. : 83.32.81.81/83.91.22.98

- Université de Nancy II
25, Rue Baron Louis, BP554 - F-54001 Nancy
Cedex
Tél. : 83.37.12.97 / 83.06.16.14

- Institut National Polytechnique de Lorraine
(I.N.P.L.) 2, Avenue de la Forêt de Haye
F-54501 Vandœuvre Cedex (France)
Tél. : 83.39.39.39

- Centre Universitaire de Luxembourg
Av. de la Palencore 162A - L-1511 Luxembourg
Tél. : 216.21

- Universität Kaiserslautern
Pfalzbergstrasse/Postfach 3049
D-6750 Kaiserslautern
Tél. : 651/205.22.15 / 205.25.86

- Universität des Saarlandes
Im Stadtwald - D-6600 Saarbrücken
Tél. : 6891/798110 / 798100

- Universität Trier
Postfach 3825 - D-5500 Trier
Tél. : 651/201.27.99 / 201.42.32

- Institut Régional Intracommunautaire
Interkommunales Regionalforum (I.R.I.)
1, Avenue de la Clarté - Postfach 1704
L-1613 Luxembourg
Tél. : 48.70.31



A European network of enterprises, universities
and related organizations developing
environmental engineering
education and training
for engineering
students and
graduate
professionals

For more information,
please contact

UETP-EEE
The Engineering Society in Finland STS
Ratavarstijankatu 2
SF-00520 Helsinki
FINLAND
telefax +358 0-1590300

or

UETP-EEE Regional Office
The Research Park
University of Oslo
Gaustadalleen 21
N-0371 Oslo
telefax +47 2 958740



A COMETT II
PROJECT

UETP-EEE COURSES IN 1991-1992

1. Reliability Engineering
Norges Tekniske Høgskole, N, - September, November, 1991
2. Environmental Modelling and the Use of
Computational Fluid Dynamics
Napier Polytechnic, UK, - October 21-26, 1991
3. Resources and Water Quality
Université de Rennes, F, - October, 1991
4. Risk Analysis
Norges Tekniske Høgskole, N, November, 1991
5. The Greenhouse Effect and Energy Production
Kuopion yliopisto, SF, - Autumn, 1991
6. Combustion and Fuels
DTU Høfors, S, - Autumn, 1991
7. Emission and Dispersion Modelling
DTU Høfors, S, - Autumn, 1991
8. Water Treatment Technology
Université de Rennes, F, - November, 1991
9. Biological Activity in Soils and Water Quality
Université de Rennes, F, - December, 1991
10. Remote Sensing and Water Resources
Université de Rennes, F, - January, 1992
11. Sludge Disposal to Farmland
Université de Rennes, F, - February, 1992
12. Multicriteria Analysis of Water Management
Université de Rennes, F, - March, 1992
13. Environmental Modelling and the Use of
Computational Fluid Dynamics
Napier Polytechnic, UK, - April, 1992
14. Safety Management
Norges Tekniske Høgskole, N, - Spring, 1992
15. Pulp and Paper Industry Wastewaters
Tampereen teknillinen korkeakoulu, SF, - Spring, 1992
16. Natural and Technological Control of Groundwaters
from Disposal Sites
Sunderland Polytechnic, UK, - Spring, 1992



A COMETT II
PROJECT



EMS 1991

ENVIRONMENTAL MANAGEMENT SEMINARS

18 NOVEMBER - 11 DECEMBER 1991

UNEP HEADQUARTERS
NAIROBI, KENYA

UNITED NATIONS
ENVIRONMENT PROGRAMME
in co-operation with
UNESCO-ROSTA

MAIN AREAS TO BE COVERED IN THE SEMINARS

Part I: Basic Principles and Processes in Ecosystems

- Human ecology and environmental ethics
- Aquatic ecosystems (lakes, rivers, wetlands, etc.)
- Coastal and marine ecosystems
- Terrestrial ecosystems (soils, forests, arid lands, etc.)
- Man-made ecosystems (cities, farms, etc.)
- Energy flow in various ecosystems

Part II: Basic Environmental Management Tools

- Environmental law
- Environmental assessment
- Environmental monitoring and data processing
- Environmental auditing
- National Environment Action Plans
- Environmental education and training
- Public awareness

Part III: Specialised Themes and Strategies for Environmental Management

- Climate change and atmospheric pollution
- Fresh water management
- Land degradation
- Biological diversity
- Hazardous wastes and toxic chemicals
- Environmental conflict resolution

All correspondence regarding the Seminars should be addressed to:

The Chief
Environmental Education & Training Unit
United Nations Environment Programme
P.O. Box 30552
Nairobi
KENYA

Fax: (2542) 220890
Tlx: 22068 UNEP KE
Phone: (2542) 230800, ext. 4190



Division des Affaires Scientifiques de l'OTAN
NATO Scientific Affairs Division

Organisation du Traité de l'Atlantique Nord - North Atlantic Treaty Organisation - B-1110 Bruxelles - Tel : 728.41

THE SCIENCE OF GLOBAL ENVIRONMENTAL CHANGE

A Special Programme of the NATO Science Committee

ACTIVITIES HELD AND SCHEDULED

The Advanced Study Institutes and Advanced Research Workshops funded by the Special Programme are given below. Each meeting is held under the responsibility of its director, to whom all requests for information, attendance or support should be addressed. Participation or tuition fees are not required from participants, some of whom may obtain small grants from the meeting director to assist with travel and living expenses. Attendance at ARWs is usually by invitation only, but a few places are available for particularly well-qualified scientists upon application to the director. Attendance at ASIs is open to all suitably-qualified applicants. Locations and dates noted in this list may change. Books prepared as an output of the meetings, usually six to twelve months after the date of the meeting, are published in a special NATO ASI series by Springer Verlag. Information on books can be requested from the Publication Co-ordination Office (PCO), Elckerlycstraat 2, B-1900 Overijse, Belgium.

ADVANCED RESEARCH WORKSHOPS (ARWs)

- 11 - 17 November, 1991, Modeling Sustainable Development and Global Environmental Change, Prof. R. Berk, UCLA Center for the Study of the Environment & Society, Dept. of Sociology, UCLA, 405 Hilgard Avenue, Los Angeles, CA 90024-1551, USA.
- Autumn 1991, Biogeochemical Ocean-Atmosphere Transfers, Prof. R. Prinn, Massachusetts Inst. of Technology, 54-1312, Center for Global Change Science, Cambridge, MA 02139, USA.
- 24 - 27 March, 1992, High Spectral Resolution Infrared Remote Sensing for Earth's Weather and Climate Studies, Dr. A. Chedin, Ecole Polytechnique, Lab. Météorologie Dynamique, 91128 Palaiseau Cedex, France.
- 3 - 9 May, 1992, Towards a Model of Ocean Biogeochemical Processes, Dr. M.J.R. Fasham, James Rennell Centre for Ocean Circulation, Gamma House, Chilworth Research Centre, Chilworth, Southampton, SO1 7NS, United Kingdom.
- 14 - 18 September, 1992, Interacting Stresses on Plants in a Changing Climate, Dr. M. Jackson, University of Bristol, Dept. of Agricultural Sciences, Long Ashton Research Station, Bristol BS18 0AF, United Kingdom.



AGRICULTURAL DEVELOPMENT TRAINING COURSES

Lincoln University, New Zealand's premier agricultural university, is one of the world's oldest agricultural teaching institutions. Today it provides a broad base of programmes in primary production and natural resources, commerce and management, science and engineering and social sciences.

Lincoln University's small size (2300 students) offers the opportunity for students to work closely with staff and to learn in a helpful and friendly environment. Lincoln's reputation is well established; there are currently students from over 40 countries enrolled.

SUMMER TRAINING COURSES NOVEMBER 1991 - FEBRUARY 1992

Six specifically designed courses are offered for project personnel who require studies of postgraduate quality without a long term, full time study commitment.

Internationally respected academic staff will present the following courses, with the emphasis balanced between theoretical and practical applications:

1. Integrated Plant Protection
2. Pasture Management
3. Dairy and Beef Cattle Production
4. Food Crop Production
5. Approaches to Environmental Management
6. Fruit and Vegetable Production

Postgraduate Qualifications in Farming Systems and Rural Development are also offered for 1992. Specifically designed for Project Managers in developing countries, the subjects include Project Management, Farming Systems, Extension, Appropriate Technology and Crop and Animal Production.

For further information contact:



Human Resource Development,
LINCOLN INTERNATIONAL LIMITED
P.O. Box 84, Lincoln University,
Canterbury, NEW ZEALAND
Fax (0364) 325 3244. Tel: (0364) 325 3044

UNIVERSITY OF LONDON WYE COLLEGE



Postgraduate Diploma and M.Sc. in Agricultural Development for External Students

*An initiative in overseas development from
Wye College, University of London*

This programme offers — through the methods of distance education — a unique opportunity for advanced study of the economics, planning and management of agricultural development in Third World countries.

Registration and examination for the Diploma or Degree are available to suitably qualified candidates anywhere in the world.

For further information write to:

Director of the External Programme,
Wye College, University of London,
Ashford, Kent TN25 5AH, England, UK.
Tel: 0233 812401. Fax: 0233 813320.



DPU

DEVELOPMENT PLANNING UNIT UNIVERSITY COLLEGE LONDON

The Development Planning Unit specialises in academic teaching, practical training and research in the field of urban and regional development in developing countries.

DPU Courses:

Master's Degree:

- Urban Development Planning
- Urban Development
- Housing in Developing Countries
- Urban Transport Planning in Developing Countries

Postgraduate Diploma

- Urban Planning Practice for Developing Countries

PhD/MPhil by research

- Urban and Regional Development Planning

Short courses: Industrial development planning; Housing policy formulation and implementation; Urban land policy and management; Urban traffic and transport policy and planning; Housing project design and evaluation; Gender planning and policy; Small and intermediate urban centres; Management and planning for metropolitan development; Action planning for urban development; Environmental planning and management; Computers in development planning.

DEVELOPMENT PLANNING UNIT (Ref N1)
9 ENDSLEIGH GARDENS
LONDON WC1H 0ED
UNITED KINGDOM

Tel: (+44 71) 388 7581 • Fax: (+44 71) 387 4541

DEVELOPMENT AND PROJECT PLANNING CENTRE



UNIVERSITY OF BRADFORD

Established in 1985, the Development and Project Planning Centre is now the UK's leading provider of training in development project planning and management. The Centre is currently increasing the scale of its teaching and research activities in certain priority areas, and several new courses are to be added to the existing portfolio of training programmes to spearhead the Centre's expanding activities in these fields.

Education Project Management

17 October - 20 November 1991

An 8-week course for Senior and Middle Managers from Indonesia and South East Asia.

The Course is designed to strengthen the capacity of education and training project managers to design, implement, monitor and evaluate human resource development projects and programmes. The course will have an Indonesian focus, but will be of general interest to education project managers from other countries in South East Asia.

Environmental Impact Assessment and Project Appraisal in Developing Countries

27 January - 31 February 1992

A 6-week intensive training course.

The Course is intended to provide a broad understanding of environmental issues in developing countries, and to develop a practical knowledge of the procedures for assessing the environmental impact of development projects.

For further details contact: The Administrator (D)
Development & Project Planning Centre, University of Bradford
Bradford BD7 1DP, West Yorkshire, England
Telephone 0876 738666 Telex 31380 UNIBRD Fax 0876 738618



University of Botswana

ANNOUNCEMENT OF THE MSC DEGREE IN ENVIRONMENTAL PLANNING

The University of Botswana invites suitably qualified applicants for its Master of Science Degree in Environmental Planning starting in August 1992.

The program will extend over two academic years and the intervening long vacation period. The first year will be concerned with coursework, and is structured on four major courses:

- the environment - processes, survey and appraisal
- social - economic systems
- environmental landuse planning
- practical techniques with particular emphasis on the use of modern Geographical Information Systems (GIS)

The long vacation period and the second year are devoted to a supervised research project on a practical planning problem.

Entrance Requirements:

The MSC program is open to holders of a Bachelor's degree with at least a Class 2 (ii) grade, with Environmental Science, Geography, or another cognate subject (to be approved by the Departmental Board), as a major subject.

Application forms should be obtained from the Faculty Administrator, the Faculty of Science, University of Botswana P/Bag 0022, GABORONE, BOTSWANA. Completed application must include names and addresses of two academic/professional referees and must reach the Faculty Administrator, the Faculty of Science, not later than the 29th November, 1991.

For detailed information about the program please write to

The Head
Department of Environmental Science
University of Botswana
Private Bag 0022
GABORONE BOTSWANA

NATURAL RESOURCES MANAGEMENT COURSE IN VENEZUELA

The University Ezequiel Zamora (UNELLEZ), Guanare, Venezuela has offered Postgraduate courses in the field of environment studies since 1988. Course topics include Planning and Management of Natural Resources, Management of Land and Water Resources, Environmental Education, Management of Aquatic and Wild Life and Management and Use of Natural Grazing Areas. Candidates should submit a formal application, two photos, copy of national identification card, certified copy of diploma(s), curriculum vitae, three academic references, and statement of sponsorship. Duration of each programme is 16 weeks. For further information, contact: Coordinación de Área de Postgrado (UNELLEZ), Vice-Rectorado de Producción Agrícola, Antiguo Convento de San Francisco, Carrera 3 con Calle 17, Guanare, Estado Portuguesa 3310, Venezuela. Telephone (58-57) 55119, 55243; Telex: 55142 UNEEZ VC.

Programme on Environmental Planning and Management, 30 September to 11 October 1991, New York, NY, USA. The World Trade Institute, together with Malcolm Pirnie Inc, is offering a two-week intensive programme on environmental issues for business executives and government officials of developing countries. Specialists will discuss air, water and soil pollution as well as scientific, political and operational measures to cope with these problems. There will also be question-and-answer sessions, panel discussions and field trips in the New York/New Jersey area. Tuition is US\$2500, which includes all programme materials and lunches. Enrolment is limited. Contact: Vincent Seglar, Manager of International Training, The World Trade Institute, One World Trade Centre, New York, NY 10048, USA; Tel: (212) 435-3175.

Course on Applied Legume Biological Nitrogen Fixation (BNF) for Extension Specialists, sessions from 2 to 13 and from 16 to 17 March 1992, San Sai, Chiang Mai, Thailand. While scientists understand the process of biological nitrogen fixation and inoculants of the *Rhizobium* bacterium are generally available, many farmers have not adopted the relatively simple technology of inoculating their leguminous trees and crops. A two-week course for extensionists will cover the basics of the symbiosis, inoculation technology, testing and evaluating inoculants, the economic benefits of inoculation, and technology-transfer skills. The deadline for registration is 15 December 1991. Contact: Training Coordinator, NifTAL Project, 1000 Holomua Avenue, Tala, Hawaii 96779, USA; Tel: (808) 579-9568; Cable: NifTAL; Telex: 7430315; FAX: (808) 579-8516.

MSc in Biotechnology

UEA
NORWICH

The University of East Anglia offers a 1 year course of study leading to an MSc by research. The major component of the degree work will be in the form of a thesis based on a project conducted at the University, or on occasion, at the nearby Institute of Food Research or John Innes Centre for Plant Science Research. There is a very wide range of research in fields relating to Biotechnology including molecular genetics of industrially, environmentally, agriculturally important microbes, advanced metalloprotein biochemistry, plant cell tissue culture for secondary products and various aspects of sophisticated plant molecular biology.

In addition to the research programme, candidates will receive advanced formal tuition in relevant disciplines including molecular biology, fermentation technology, patent law, microbial physiology and plant biology.

Students may start this course at the beginning of each of the terms, October, January and April. Applications from citizens of EC countries are particularly welcome.

Applications for this course should be made to Professor A W B Johnston, Director of Graduate Studies, University of East Anglia, Norwich NR4 7TJ, U.K. (01603

UNIVERSITY OF MANCHESTER

MSc/Diploma

Pollution and environmental control

1-2c yrs f-t (MSc), 1 yr f-t (Diploma)

Joint course with Manchester (UMIST); *course content*: intro (definition and relationship to wider problems, waste diffusion, risk assessment, principles underlying estimation of pollution damage and its technical, legal and admin control), pollution damage (relationship between waste disposal and pollution accumulation and passage through food chains, detection of persistent pollutants by chem and biol methods and biol indicators, effects of pollution on agriculture, fisheries, human health and wildlife, estimation of pollution damage), noise, oil spillage; technical control systems (monitoring systems, technical means of control and removal of pollutants within processes and at release, criteria for selection of methods, recycling sewage and toxic waste disposal), public authority control systems (econ assessment of damage, optimal pollution control, cost considerations in town planning, legal and admin systems in UK, methods of control, planning powers, control systems in foreign countries); cont assessment, examination and research dissertation. MSc and Diploma in Advanced Studies. SERC supported.

Contact: Dr E G Bellinger, Environmental Biology, University of Manchester, Williamson Building, Oxford Road, Manchester M13 9PL, UK

*If you are thinking a year ahead, sow seed.
If you are thinking ten years ahead, plant a tree.
If you are thinking one hundred years ahead, educate the people.*

*By sowing seed, you will harvest once.
By planting a tree, you will harvest tenfold.
By educating the people, you will harvest one hundredfold*

Anonymous Chinese poet, 400 B.C.

**THOSE
WHO CARE,
TEACH!**

ET Worldwide:

Compiled, from publicly available information, by the Environmental Education & Training Unit (Michael Atchia and Ulf Carlsson),

United Nations Environment Programme, P.O. Box 30552, Nairobi, Kenya
(Room S-206, Tel. (2542) 330800, Ext. 4191, Fax (2542) 226890.

whom you may contact for further information/discussion on environmental training courses.

UNEP does not take responsibility for the reliability of the information reproduced herein. For specific details, costs, application procedures etc. of any given course, please write directly to the university or training institution concerned.